

EXECUTIVE SUMMARY

I. Project Information

Project Name:	Proposed Modification of Holcim Davao Cement Plant and Port Facility Project
Location:	Barangay Ilang, Davao City Province of Davao del Sur
Cement Handling Method:	Mixing and grinding of raw materials. Sea terminal for raw materials in-loading and for cement in-loading and out-loading/ dispatching
ECC No.:	ECC No. 9402-004-302C
Total Area:	48.03 has. (Cement plant: 29.80 has. + port facility: 18.23 has.)
Production Capacity:	6000 MTPD of clinker

The Environmental Management Bureau (EMB) granted Davao Union Cement Corporation (DUCC) an Environmental Compliance Certificate (ECC) denominated as ECC-9402-004-302C on April 11, 1996 for the 3,500 TPD Cement Plant Expansion, which increased the cement plant's total daily production rate including its existing line to 6000 metric tons of clinker. Said ECC was amended on July 1, 2004 to include the use of alternative fuel. On May 5, 2016, it was again amended to change the name of the proponent from DUCC to Holcim Philippines, Inc.

The port facility is covered by a separate ECC, which was given to DUCC on June 20, 1995 by EMB Regional Office No. XI. An amendment to change the proponent's name from DUCC to Holcim Philippines Inc. was granted on October 19, 2016.

II. Proposed Plant Expansion

The Project will focus on the rehabilitation, modification, and upgrading of existing facilities. It involves increasing the cement grinding capacity of Davao plant by restarting the idle existing 90 t/h capacity Cement Mill #2, utilizing clinker brought into the plant's jetty by ship. The existing raw materials handling and storage infrastructure between the Davao jetty and plant will be upgraded to accommodate the additional materials volumes to be imported. **Table 1** details the existing facilities/equipment for rehabilitation, modification, and upgrading.

The project encompasses installation of two (2) units eco-hopper at the plant's jetty, a conveying system towards an existing storage materials facility and rehabilitation and activation of an existing cement mill with an output capacity of ninety tons per day cement. The project will also install a second transport pipe for the existing in-loading facility and reconstruction of a cement silo (Cement Silo #5).

A total of eighteen (18) bag filter type dust collectors will be installed across the key transfer points. All filters are adequately designed and provided with a filter-to-cloth ratio of no less than 1 m³/m²-min to ensure adequate surface area for capturing dust and pollution abatement. **Table 1** details the existing facilities/equipment for rehabilitation, modification and upgrading.

Table 1: Existing Facilities/Equipment for Rehabilitation, Modification, and Upgrade

Plant Department	Equipment	Capacity
MAIN STORAGE CAPACITIES		
CEMENT GRINDING		
<i>Receiving of Clinker - Storage</i>		
Clinker	Hall Mill 2 (existing)	~40,000 t
Limestone	Hall Mill 2 (existing)	~2,000 t
Gypsum	Hall mill (existing)	~10,000 t
Slag	Hall Mill 3 (existing)	~20,000 t
Pozzolan	Hall Mill 3 (existing)	~5,000 t, balance outdoor
	Clinker storage #3 (existing)	~2,000t
<i>Cement Mill Feed</i>		
Clinker	Feed bin (existing)	390t
Limestone	Feed bin (existing)	70t
Gypsum	Feed bin (existing)	70t
<i>Cement Transport/Storage</i>		
Storage: Cement Silos	Silo 1 (existing)	4,000 t
	Silo 2 (existing)	4,000 t
	Silo 6 (existing)	15,000 t
	Silo 7 (existing)	15,000 t
	Silo 8 (existing)	2,000 t
	Silo 5 (for reconstruction)	5,000 t
Storage – Fly ash	Fly ash silos	300t
MAIN EQUIPMENT CAPACITIES		
CEMENT GRINDING		
<i>Clinker Receiving</i>		
Eco hoppers	Hoppers	2 x 700 tph
Conveyors	Raw material belt conveyors	700 tph
	Tripper belt conveyor	700 tph
<i>Cement Grinding – “OPC”</i>		
Cement Milling	Cement mill #2 (new)	3,300 kW
	New equipment:	
	One mill ventilation filter, including fan	
	One mill discharge air slide	
	One separator feed bucket elevator	
	Series of separator feed air slides	
	One cement mill trap	
	Separator (option of modifying the existing separator)	
	Separator fan	
	Process filter, including fan	
	Series of separator rejects air slides	
	One flow meter	
	One grinding aid system (supplied by the Plant / grinding air supplier)	
	One water injection system	
	Mill internals (liners, diaphragm, ball charge)	
	Auxiliaries, such as dedusting filters, valves, hoists etc. as required	
<i>Cement Transport/Storage</i>		
Cement Transport	Pneumatic (new)	110 tph
SHIPPING STATION		

Plant Department	Equipment	Capacity
Cement Receiving	Pneumatic (new)	110 tph

III. Project Rationale

The continuous growth in the infrastructure sector resulted to 6.6% annual increase in the sales of cement in 2016. The increase in the demand for cement is expected to be sustained as the Philippine Government accelerates infrastructure development in the next six (6) years. The 2017-2022 Philippine Development Plan characterized the next six (6) years as the “golden age of infrastructure”, in which the Philippine Government identified infrastructure development as one of its top priorities and will implement several projects that will spur further socio-economic growth.

To respond to the needs and to support further development specifically in Southern Mindanao, Holcim Philippines, a member of Lafarge Holcim, shall increase the cement grinding capacity of its Davao Plant. This requires the rehabilitation of existing Cement Mill #2 as well as the modification and upgrading of existing storage and port facilities.

The proposed project aims to reduce the transport costs between the cement producer and consumer in order to provide a more reasonable market price for cement. The installation of the conveyor belt systems shall likewise reduce the number of trucks plying along the national highway. Thus, fugitive dust produced by hauling of materials will decrease and safety of the other road users will be assured as the number of road accidents involving trucks will be reduced.

IV. Process/Technology

Cement Manufacturing/Processing

Limestone a major raw material component of cement manufacturing is sourced from the Holcim Mining Development Corporation quarry and are transported to Holcim Davao cement plant's crusher through dump trucks. The crusher is designed to have a capacity of 1,000 tons/hr. The crushed raw materials will then be transported to the portal storage by a 7-km belt conveyor that has a capacity of 500 tph. The raw materials are then fed to Fuller Vertical Roller Mill (Fuller Loesche Mill 48.4) at the rate of 300 tph. Next is clinker production in the kiln. The kiln has a capacity of 3770 tpd with 2,500 kW power. The clinker is being cooled in the IKN Pendulum Clinker Cooler with a capacity of 3,770 tpd. The cooled clinker is then conveyed to the clinker silo. Clinker withdrawn from the silo will be fed to the cement mill for the cement grinding process. The grinding process comprises 90% of clinker, 5% gypsum, and 5% mineral filler. The cement mill has a designed capacity of 210 tph.

Figure 1 presents the material balance of Holcim Davao plant.

Raw Materials

The average annual quantities of raw materials required for the current and proposed expansion are as follows:

Cement mill 2 will primarily utilize imported clinker from Vietnam.

Raw Materials (Quantity)	Current Operations	Proposed Expansion	Combined
Limestone	1.6 million MTPY for clinker burning + 108k MTPY for cement milling	26.8K MTPY	1.7 mio MTPY
Silica	66k MTPY	0	66k MTPY
Pozzolana	86k MTPY	0 **	86k MTPY
Gypsum	38k MTPY	33.5k MTPY	71.5 MTPY

**Silica is only used in clinker production*

***Pozzolana is only used in Excel*

All the above raw materials are to be purchased from third party sources and will be stockpiled in designated sites.

Resource Utilization

The average volumes of resources being utilized by the current operation along with the proposed expansion are as follows:

Resource	Source	Current Operations	Proposed Expansion	Combined
Water	Plant owned groundwater pump and local water district for domestic water	306k cum per year	36.1k cum per year	351k cum per year
*Coal	Indonesian Coal, US Petcoke, Indian Petcoke (transported via vessel/barge)	125k MTPY	0	125k MTPY
Bunker Fuel	Local suppliers such as Petron (transported via lorry)	1.1 million LPY	0	1.1 million LPY
Electricity/ Power Usage	Aboitiz Group	124 million KWPY	48 mio KWPY	181 mio KWPY

**Note: Coal and petcoke are delivered to the plant in barges or vessels, which are then transported to the storage areas of the plant using dump trucks upon unloading.*

Water Supply

The water requirement for cement plant processing and manufacturing is sourced from the existing deep well pumping station located 2-3 km away from the plant. An NWRB permit was secured for both deep wells to pump water at the known source of 8.5 and 4.25 liter per second (LPS) for RC1 and RC2, respectively.

The domestic water need of the project of 32,139.27 m³ per annum is being supplied by the Davao City Water District (DCWD). This exclude domestic water use for drinking purposes that is being supplied by local water purifiers of Davao City.

At present, the plant consumes 286,888.90 m³ of ground water per annum or an average equivalent of 786.00 m³ per day. The ground water is mainly used for the cooling system make-up water, water spray FMILL 3, water spray coal mill, domestic, GCT, water hydrants, cooler area, and VRM Area.

Upon installation and operations of Cement mill 2, there will be an increase in water use of about 36,310 m³. Bulk of the additional water use will be utilized as water spray (99.9%) while the remainder will be used as cooling water (0.98%).

The projected annual additional increase of the total water withdrawal coming from the ground water pumping station of 36,310.00 m³ for cooling water and water spray will be realized upon the completion of the proposed modification of the cement plant, which will commence on 2019.

Bunker Fuel

Bunker Fuel is mainly used as fuel during start-up of kiln operations by firing. Generally, start-ups last for around eight (8) hours with a usage rate of 25-40 liters per minute of BFO. The annual consumption of BFO is directly proportional to the number of shutdowns in a year.

For the proposed expansion, there is no expected increase in BFO consumption. Cement mill operation only requires the use of electricity to run the motors and auxiliary equipment. Fuel combustion is only applied in operating a kiln.

Dispatch Outbound Materials

Davao Plant produces three (3) types of cement, namely: OPC, Excel (blended cement) and Wallright (masonry cement). The products are being dispatched either in bulk, bagged, or tonner. Bagged cement are packed in a 40 kgs bag using the roto-packers and loaded into trucks.

Ship Offloading

Imported raw materials such as coal, clinker, slag etc. will be offloaded from up to 25,000 DWT ships at the port facilities.

Two (2) ECO-hoppers will be installed to run on rails on the quayside to receive the material from the ship's cranes, for transport to the appropriate storages at the plant. To facilitate this, the existing (currently unused) belt conveyor system will be upgraded to meet the 700 t/h ship offloading capacity requirement.

The proposed expansion is illustrated in **Figure 2**.

Materials Handling, Transport and Storage

The existing belt conveyor system will be modified, rehabilitated, and upgraded for the transportation of raw materials and coal to the existing plant storages.

A 700 t/h capacity conveyor system will transport clinker and other non-coal raw materials from the existing raw material transport system to the existing clinker and additives storage building.

This new tripper belt conveyor in the existing clinker storage building will be installed along one side of the building, under a new semi-automated grab crane system which will reclaim clinker and additives gypsum and limestone from the storage for feeding to the Cement Mill #2 feed bins.

The existing gypsum and slag tripper belt conveyor in the existing additive storage will be replaced by a new conveyor to cope with the increased transport capacity from the jetty.

The capacity of the coal transport conveyors to the existing storage, including the reversible conveyor inside the hall, will be increased by replacing the conveyors. Existing conveyor support galleries will be extended /reinforced as required.

Cement Mill#2 Rehabilitation

All the mechanical process equipment components will need to be overhauled or replaced dependent on the current condition. Cement Mill #2 has an overall cement grinding capacity of 90 tph (OPC) that will result in the increase of the plant's Standard Cement Production Capacity from 1,600,000 mtpy to 2,270, 000 mtpy. The increase is still within the approved plant's total daily capacity production rate of 6,000 metric tons of clinker.

Technical Description of Proposed Equipment Modification***Cement Grinding***

The idle cement mill #2 will be restarted by upgrading and/or replacing equipment as required.

Receiving of Clinker

Imported raw materials such as coal, clinker, slag etc. are offloaded from up to 25,000 DWT ships at the Holcim Davao port facilities.

Holcim Davao will employ two ECO-hoppers running on rails on the quayside to receive the material from the ship's cranes, for transport to the appropriate storages at the plant. In order to facilitate this, the existing (currently unused) belt conveyor system needs to be upgraded to meet the 700 t/h ship offloading capacity requirement.

The system requirements are:

- Two Eco-hoppers on rails, including dedusting equipment as required;
- Two new clamshells for ship unloading;
- Two belt conveyors extracting materials from the Eco-hoppers;
- Series of new belt conveyors running from the port facility to the plant, support gallery partially reutilized;
- One new tripper belt conveyor installed along one side of the existing clinker and additive storage hall;
- Replacement of the existing grab crane in the existing storage hall; and
- Dedusting and auxiliary equipment as required.

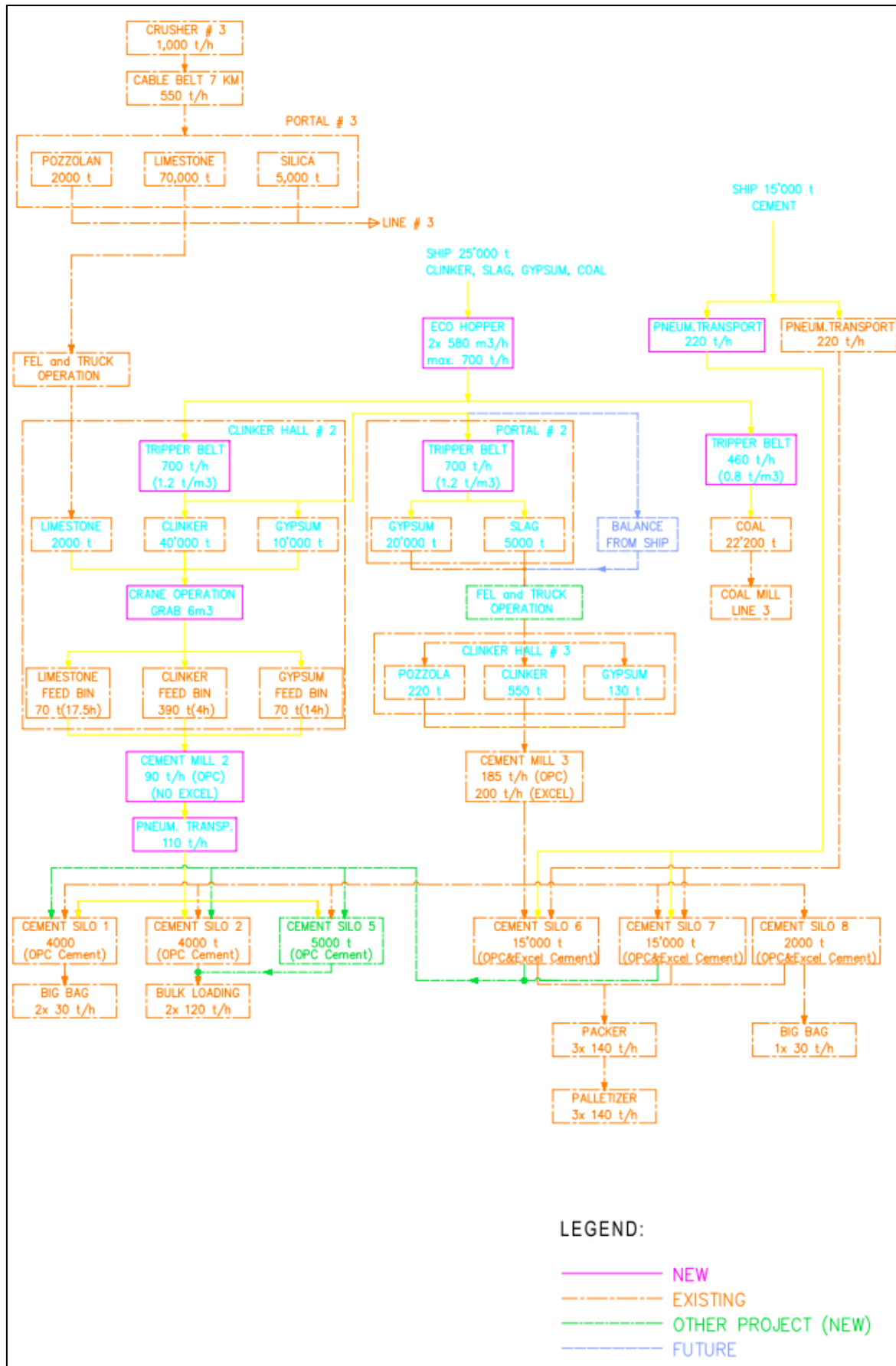


Figure1: Holcim Davao plant material flow balance

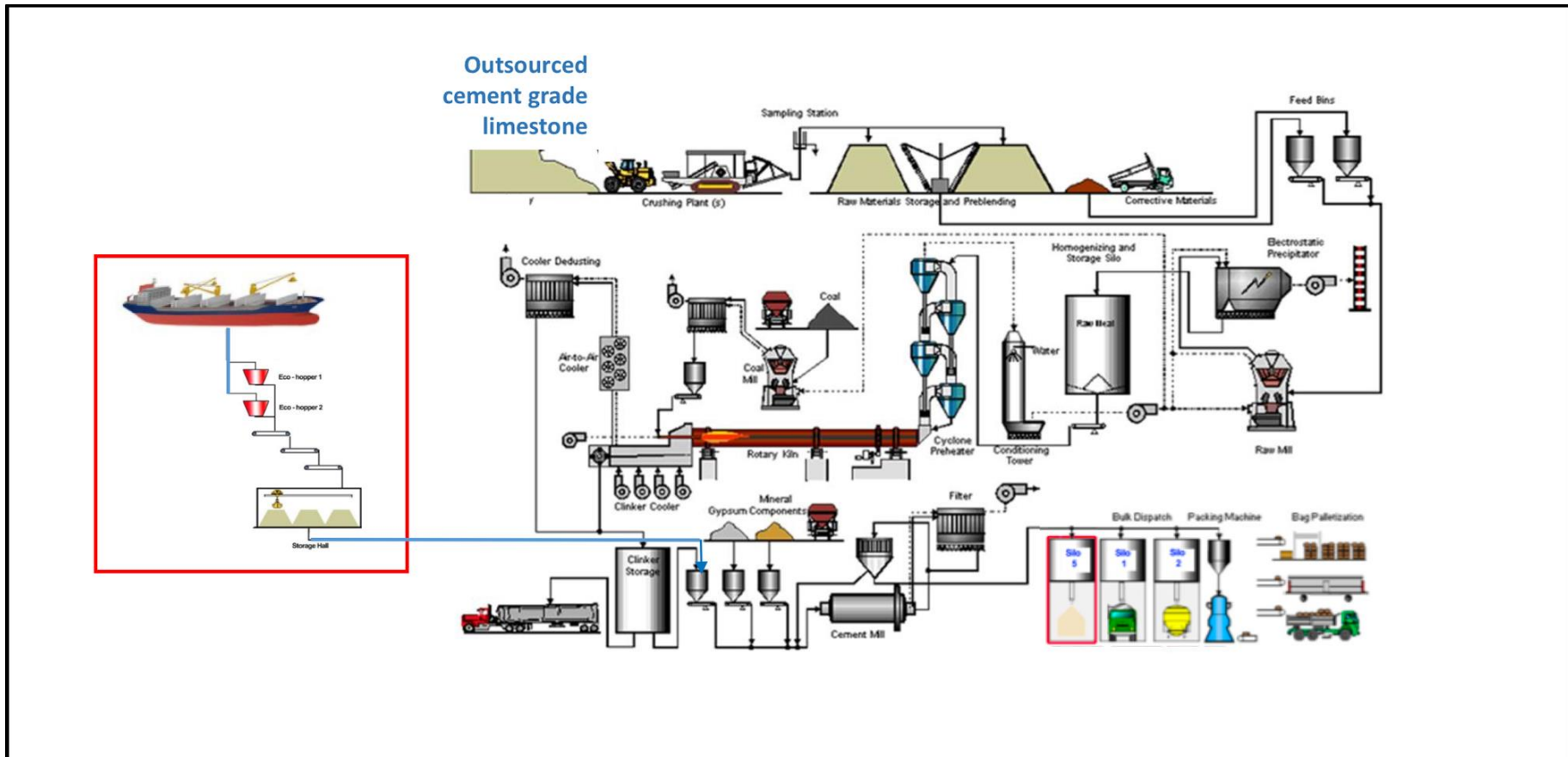


Figure 2: Existing plant operation along with the proposed expansion (highlighted in red)

Clinker Transport to Mill Feed Bin

Clinker and additives will be fed to their respective existing feed bins by the new grab crane in the storage hall.

Cement Mill Feed

Clinker and additives will be extracted from the existing feed bins by means of belt weigh feeders discharging on a collecting belt apron conveyor feeding the existing cement mill.

The system requirements are:

- One existing clinker feed bin
 - One new belt weigh feeder
- Additive feed bins
 - One existing Limestone feed bin
 - One new Limestone belt weigh feeder
 - One existing gypsum feed bin
 - One new Gypsum belt weigh feeder
 - One new belt pan conveyor feeding the existing cement mill
 - One new belt apron conveyor feeding the cement mill
 - Dedusting and auxiliary equipment as required

Cement Mill

The existing 90 t/h #2 cement cement mill at Davao has been standing idle since 2006 and is now to be restarted. In order for the mill to be restarted for service at its original 90 t/h nominal OPC production capacity, all the mechanical process equipment components will need to be overhauled or replaced depending on their current condition.

Cement Mill #2 was installed by FLS 1984 and its original first generation separator was replaced by a Polysius SEPOL 230/4 in 1997.

A preliminary assessment of the installation performed in March 2015 showed that some parts of the existing installation could possibly be reused to restart the mill.

The major findings were:

- Equipment in reasonable conditions, but requiring reconditioning:
 - Mill shell, trunnion, gear box
 - Separator casing, gear box, separator fan, separator shaft completely submerged in dust
 - Bucket elevator casing, gear box
- Equipment in poor conditions and to be replaced
 - Mill trunnion lubrication unit
 - Mill ventilation fan
 - Bucket elevator chains
 - All electrical equipment, including cabling
 - Among others

For the preparation of the Feasibility study, a detailed assessment was performed by Cemtech International, Thailand. The assessment revealed that only limited equipment can be reutilized or reconditioned at a reasonable cost. Additionally, all electrical equipment, including main mill motor, cabling, MCC's etc. is to be replaced.

The upgraded cement mill #2 will be fed by a pan conveyor. At the mill, discharge material will be transported by an air slide to a bucket elevator feeding the separator via a series of air slides. A ball trap will be installed in one of the air slides. Separator rejects will be recirculated by means of air slides to the mill inlet.

The system requirements are:

- Equipment rehabilitation
 - Cement mill shell
 - Cement mill gear box
 - Cement mill service crane
- New equipment
 - One mill ventilation filter, including fan
 - One mill discharge air slide
 - One separator feed bucket elevator
 - Series of separator feed air slides
 - One cement mill trap
 - Separator, Option of modifying the existing separator to be discussed with suppliers
 - Separator fan
 - Process filter, including fan
 - Series of separator rejects air slides
 - One flow meter
 - One grinding aid system (supplied by the Plant /grinding aid supplier)
 - One water injection system
 - Mill internals (liners, diaphragm, ball charge)
 - Auxiliaries, such as dedusting filters, valves, hoists etc. as required

Cement Transport and Storage

Finish product from the process filter will be transported by means of air slides to a new pneumatic cement transport system. Cement from the restarted mill will be transported to existing cement silos # 1, 2 and new silo # 5 in a new transport pipe.

The system requirements are:

- Reconstruction of cement silo #5
- New series of air slides, including blowers
- One new automatic sampler (manual sample collection)
- One new pneumatic cement transport system (pressure vessel type), including compressors
- One new cement transport pipe on existing structure to silos # 1, 2 and new # 5, including diverter gates
- One new bag filter for each silo # 1 and 5 (existing filter on silo #2 reused)

Shipping Station

Receiving of Cement

Imported Cement will be offloaded from up to 11,000 DWT self-offloading ships at the port facilities at the Davao plant site from where Cement will be transported pneumatically to existing silos # 6 and 7.

The system requirements are:

- One new Cement transport pipe (installed along the existing pipe) from the port to silos # 6 and 7, including diverter gates
- One new bag filter for each silo # 6 and 7

Gypsum and Additive Preparation and Handling

Unloading and Storage

At one end of the clinker storage hall, gypsum and slag will be fed from the tripper belt conveyor via a chute onto a new belt conveyor running to the existing storage hall. The existing tripper belt conveyor in the storage hall will be upgraded as required.

The system requirements are:

- One new chute
- One new belt conveyor
- Upgrade of existing tripper belt conveyor in the existing storage hall

Traditional Fuels Preparation and Handling

Fuel Unloading and Storage

From the new transfer tower at the port, coal will be diverted onto a series of new belt conveyors feeding a new reversible discharge belt conveyor in the existing storage hall. The belt conveyor capacity will be upgraded to cope with the ship offloading capacity of 460 tph. The conveyor galleries will be extended/reinforced as required.

The system requirements are:

- Series of three new belt conveyors running from the transfer tower at the port to the existing storage hall
- One new reversible belt conveyor in the storage hall
- Extension and reinforcement of existing conveyor galleries as required

General Plant Services

Compressed Air Systems

The plant compressed air system will be extended to the additional consumers as required.

The system requirements are:

- One new compressed air system for “jetty area” consumers
- One new compressed air system for “mill area” consumers

Water System

Process Water Treatment and Distribution

The plant process water system will be extended to the additional consumers as required. The system requirements are:

- One cooling water system (cooling tower) installed in Mill area

The proposed Cement mill 2 reactivation will require a cooling system using groundwater (**Plate 1**). The system will be needing a supply of 57.1 m³/hr of which will be supplied from the existing groundwater well of Holcim. Water from the well will be pumped to a tank with a capacity of 200 m³ of water. From the tank, a pipeline will be installed connecting to a cooling tower, which is designed to hold up to 100 m³ of water. The system will be equipped with two (2) units water pump with a rating of 100 m³/hr and a 22 kilowatt drive motor. The cooling system is designed to be closed-loop hence it will only require 10 m³ per month of make-up water in its operation.

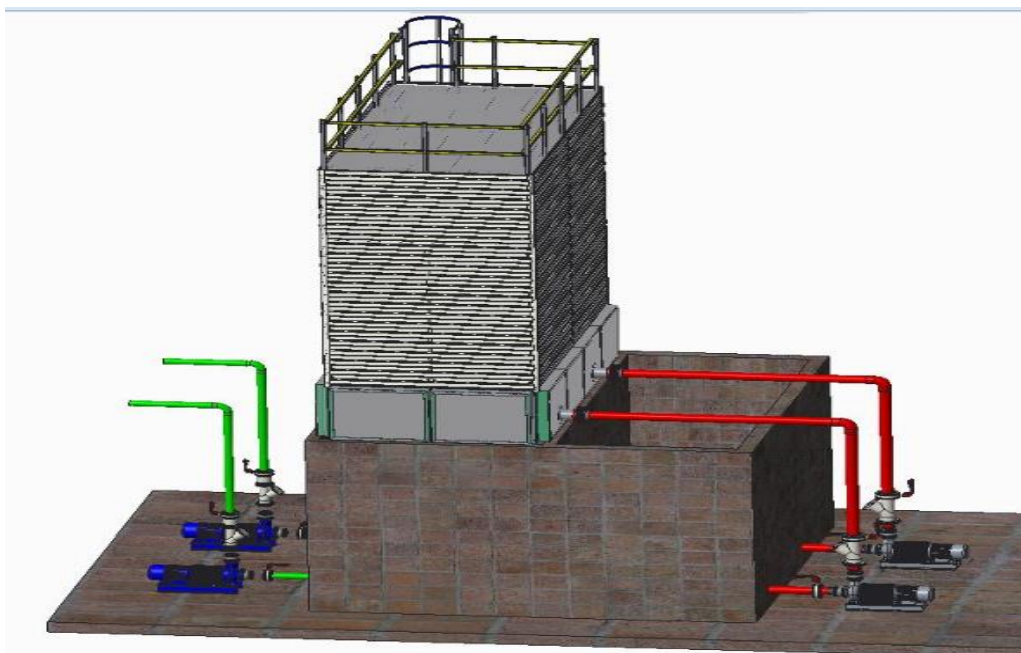


Plate 1: Illustration of the proposed cooling water system

Inherent to the operation of the cement mill in producing cement, a water spray will also be necessary in its milling activity. The estimated consumption of water per month is 3,000 m³. The source of this will be the same as the cooling water.

V. Project Location

The Project is located in Barangay Ilang, Davao City. The Cement Plant location is within the geographical coordinates presented in **Table 2**, with the total area of 29.80 hectares. The geographical coordinates of the Port Facility are shown in **Table 3**, with a total area of 18.23 hectares.

Table 2: Geographic Coordinates Encompassing the Cement Plant

Corner	Latitude	Longitude
1	7° 10' 23.47"	125° 39' 11.98"
2	7° 10' 21.23"	125° 39' 04.50"
3	7° 10' 24.35"	125° 38' 53.71"
4	7° 10' 28.77"	125° 38' 55.22"
5	7° 10' 28.97"	125° 38' 56.01"
6	7° 10' 30.56"	125° 38' 56.62"
7	7° 10' 35.69"	125° 38' 57.44"
8	7° 10' 36.21"	125° 38' 57.87"
9	7° 10' 35.70"	125° 39' 01.21"
10	7° 10' 34.15"	125° 39' 01.13"
11	7° 10' 33.64"	125° 38' 59.97"
12	7° 10' 32.23"	125° 39' 00.19"
13	7° 10' 33.05"	125° 39' 02.08"
14	7° 10' 35.26"	125° 39' 03.52"
15	7° 10' 38.42"	125° 39' 03.37"
16	7° 10' 37.61"	125° 39' 05.38"
17	7° 10' 40.66"	125° 39' 07.34"
18	7° 10' 41.08"	125° 39' 07.57"
19	7° 10' 42.37"	125° 39' 08.99"
20	7° 10' 43.46"	125° 39' 08.98"
21	7° 10' 43.97"	125° 39' 08.91"

Corner	Latitude	Longitude
22	7° 10' 44.75"	125° 39' 09.24"
23	7° 10' 45.71"	125° 39' 09.39"
24	7° 10' 46.11"	125° 39' 08.82"
25	7° 10' 45.25"	125° 39' 09.29"
26	7° 10' 44.11"	125° 39' 08.65"
27	7° 10' 43.69"	125° 39' 08.69"
28	7° 10' 43.74"	125° 39' 08.54"
29	7° 10' 43.43"	125° 39' 07.00"
30	7° 10' 46.17"	125° 39' 05.93"
31	7° 10' 55.92"	125° 39' 02.54"
32	7° 10' 53.90"	125° 39' 04.15"
33	7° 10' 53.07"	125° 39' 05.46"
34	7° 10' 51.04"	125° 39' 07.29"
35	7° 10' 49.68"	125° 39' 08.32"
36	7° 10' 46.49"	125° 39' 07.76"
37	7° 10' 46.04"	125° 39' 08.33"
38	7° 10' 46.11"	125° 39' 08.82"
39	7° 10' 46.70"	125° 39' 08.01"
40	7° 10' 50.56"	125° 39' 11.99"
41	7° 10' 51.35"	125° 39' 13.14"
42	7° 10' 47.84"	125° 39' 15.41"
43	7° 10' 44.53"	125° 39' 13.76"
44	7° 10' 40.14"	125° 39' 12.55"
45	7° 10' 33.90"	125° 39' 10.82"
46	7° 10' 29.99"	125° 39' 11.58"
47	7° 10' 29.67"	125° 39' 11.67"
48	7° 10' 29.51"	125° 39' 10.79"
49	7° 10' 18.42"	125° 39' 10.67"
50	7° 10' 18.63"	125° 39' 13.50"

Table 3: Geographic Coordinates Encompassing the Port Facility

Corner	Latitude	Longitude
1	7° 10' 31.26"	125° 39' 11.34"
2	7° 10' 33.90"	125° 39' 10.83"
3	7° 10' 40.14"	125° 39' 12.55"
4	7° 10' 44.54"	125° 39' 13.76"
5	7° 10' 47.85"	125° 39' 15.41"
6	7° 10' 51.36"	125° 39' 13.14"
7	7° 10' 53.63"	125° 39' 15.42"
8	7° 10' 54.69"	125° 39' 24.81"
9	7° 10' 46.71"	125° 39' 27.14"
10	7° 10' 44.89"	125° 39' 21.06"
11	7° 10' 33.41"	125° 39' 16.26"
12	7° 10' 30.57"	125° 39' 16.61"
13	7° 10' 30.16"	125° 39' 14.36"
14	7° 10' 29.67"	125° 39' 11.67"
15	7° 10' 29.98"	125° 39' 11.58"
16	7° 10' 30.10"	125° 39' 12.22"
17	7° 10' 31.38"	125° 39' 11.98"

The plant site is situated within the industrial zone of the city and with residential communities in the north and western boundaries. The Jetty area is located close to the plant and is hosted by the Davao Gulf. A national highway road separates the Jetty area and the Davao Plant cement manufacturing facilities. The location map is shown in **Figure 3**



Figure 3: Location Map of Holcim Davao Plant

VI. Proponent Profile

Proponent Name: **Holcim Philippines Inc. (HPI)**

Office Address: **7th Floor, Venice Corporate Center
No.8 Turin Street
McKinley Hill Town Center
Fort Bonifacio, 1634 Taguig City,
Philippines**

Plant Address: **Barangay Ilang, Davao City, Davao del Sur**

Contact Person: **XAVIER ARUL KENNEDY SAVARIMUTHU
Vice President. Plant Manager**

Contact Number: Head Office: (+632) 459-3333

VII. Preparer ProfileThe logo for AXceltechs, Inc. features the word "AXceltechs" in a bold, green, sans-serif font, with a stylized green 'X' that has a shadow effect. The word "Inc." follows in a smaller, green, sans-serif font.

Office Address: **Unit 10C, Lansbergh Place
170 Tomas Morato, Quezon City**

Authorized Representative/
Contact Person (s): **ENGR. PAULO NONI T. TIDALGO
Managing Director**

Contact Number **(02) 376-0043**

VIII. Development Plan, Description of Project Phases, and Corresponding Timeframes**i. Pre-Construction Phase**

- Planning of technical design and finalization of construction method for the installation of the plant facilities;
- Soil investigation prior tendering of civil works; and
- Securing of necessary permits.

In compliance with the commitment of environmental protection and community development, the activities stipulated in the existing Environmental Management Plan (EMP), Environmental Monitoring Plan (EMoP), and Social Development Plan (SDP) shall still be implemented.

ii. Construction Phase

Construction phase involves the following:

- Hiring of qualified manpower required to complement the workers in the construction/rehabilitation works and mining and processing operation activities; and
- Construction of new plant facilities to support the proposed expansion.

The construction activity for the proposed modifications is projected to commence after the acquisition of all regulatory permits from government offices. Construction activities will entail the use of heavy equipment and clearing of some facilities.

iii. Operation Phase

The operation phase encompasses all the activities for cement plant manufacturing and for port operations. Actual procedures in carrying out the activities were discussed in the preceding sections.

During this phase, Holcim Davao will also be implementing the activities stipulated in the EMP, EMoP, and SDP; simultaneous with its operations to ensure environmental protection and community development.

iv. Abandonment/Decommissioning Phase

The major activity involved in this phase is the decommissioning of Port Facility and Cement Manufacturing Plant. The closure and decommissioning activities will be implemented in consultation with the host communities through the Local Government Units.

IX. Delineation of Impact Areas

The area subjected to the EIA was based on the perceived direct and indirect impact areas of the proposed project. As stipulated in DAO 2003-30, direct impact areas, in terms of physical environment, are those where all project facilities are to be constructed/situated and the designated project area. On the other hand, areas not directly subjected to any activities/construction and those outside the project area but are within the jurisdiction of Davao City (e.g. stretch of the river draining the project area, communities along haul roads) are considered as indirect impact areas. Consistent with the provision of DAO 2003-30, the direct impact barangay is Barangay Ilang, while the indirect impact area is the administrative district of Bunawan, which includes the following barangays:

1. Bunawan Proper
2. Ilang
3. Mahayag
4. Mudiang
5. Panacan
6. Tibungco

The proposed project modification will not cause displacement to existing households, business activities, industries, as well as local institutions.

X. Commitment to Prevent Adverse Negative Impacts

a. Pollution Control Devices

The project has three (3) units electrostatic precipitators serving the existing cement mill (FM3), clinker cooler and kiln and VRM areas. Jet pulse dust filters are also installed across the process line at identified points to control dust emissions. **Figure 4** presents the installed pollution control devices along the process line.

b. Waste Management

Solid wastes are segregated at source through the use of waste bins. The bins are labeled with paper and plastics, metal scrap, wood scrap and biodegradable waste. All domestic wastes under the category of paper and plastics are co-processed in the kiln as alternative fuels. Scrap wood and metal are disposed thru an accredited scrap buyer for downcycling.

The plant is also an accredited Treatment, Storage and Disposal (TSD) Facility of the DENR-EMB. Hazardous wastes such as used oils and oil-contaminated rags are also co-processed as alternative fuel. Other hazardous wastes that are not covered by the plant's TSD permit are treated and disposed thru a third party EMB accredited facility.

The main sources of wastewater from the plant are discharges from the plant's cooling tower and rainwater run-off. Drainage system of the cooling water leads to an oil trap to ensure separation of any residual oil. Runoff water are de-silted thru the use of gravel filters installed in the siltation ponds.

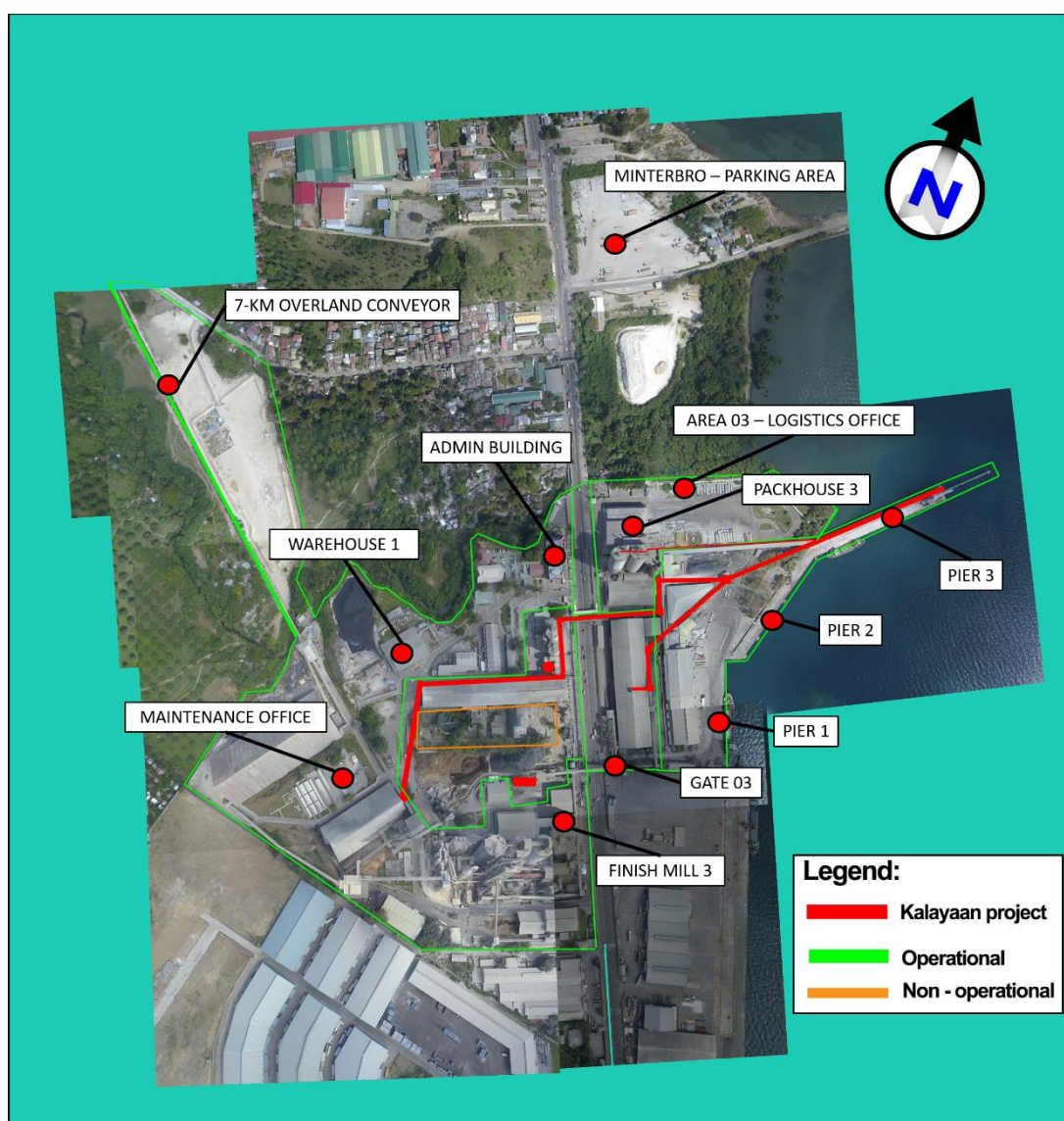


Figure 4: Holcim Davao Plant General Layout with the proposed modification

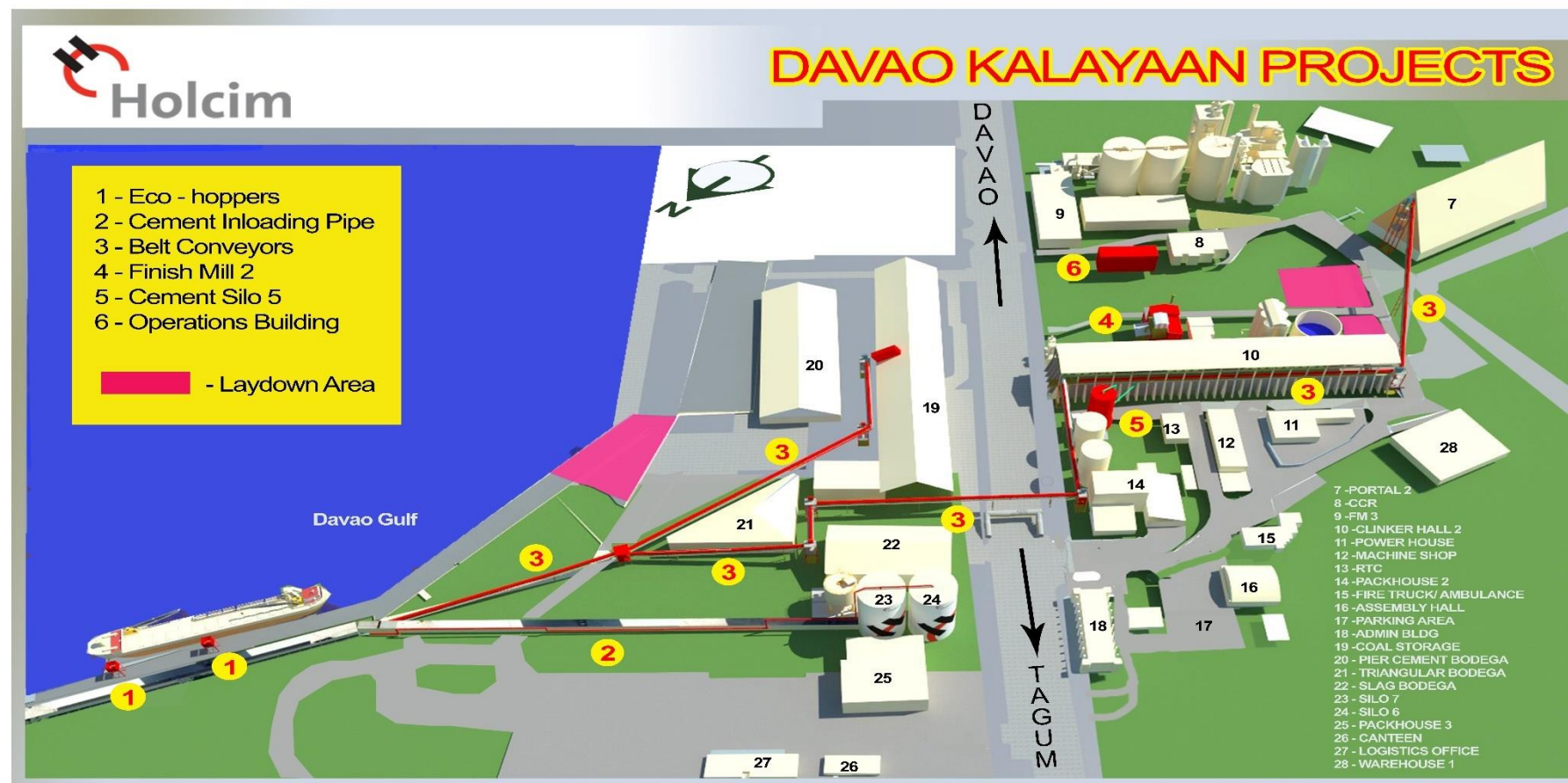


Figure 5: Illustration of Holcim Davao Plant General Layout with the proposed modification

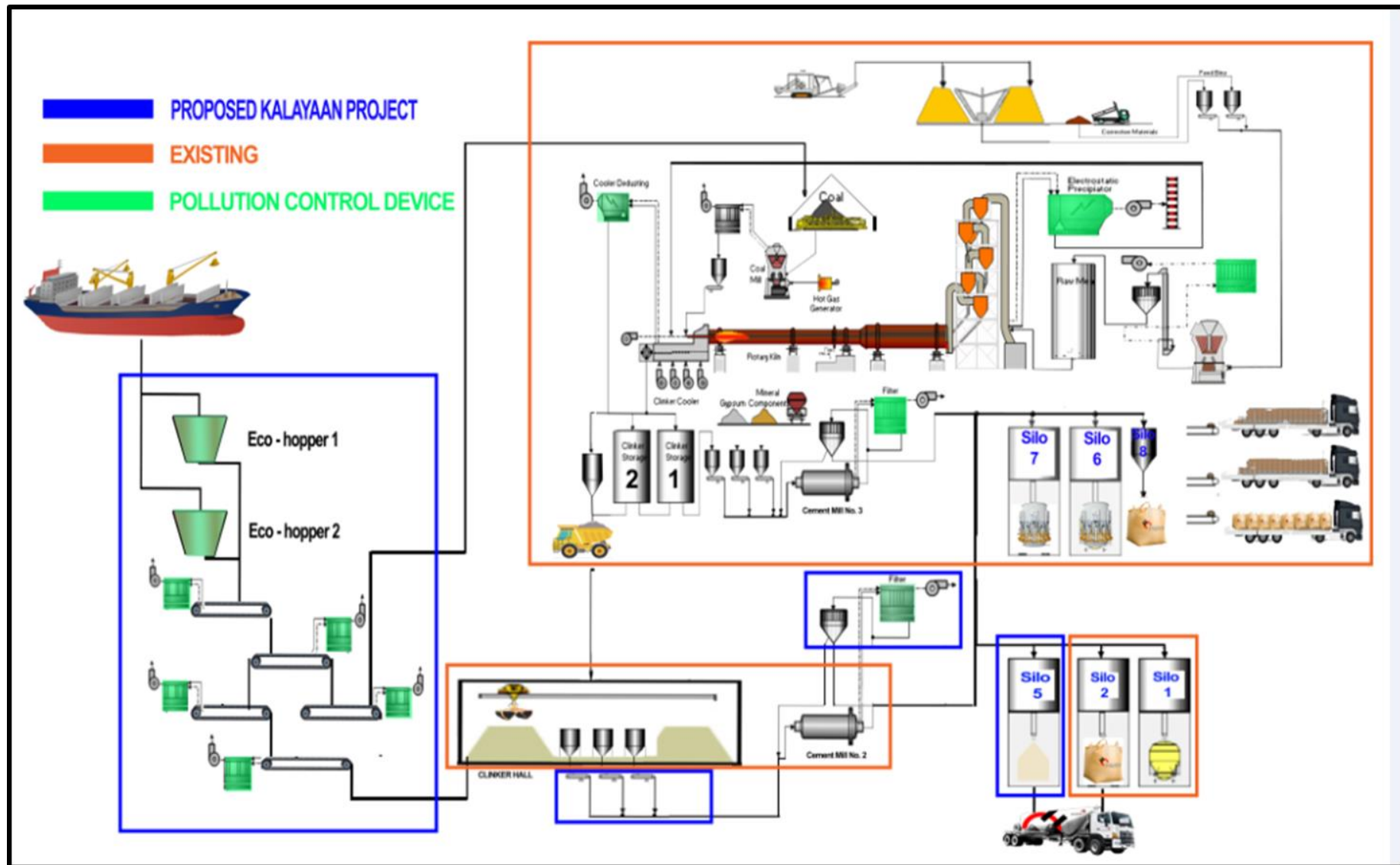


Figure 6: Process flowsheet diagram with pollution control devices



Plate 2: Holcim Davao Plant main entrance



Plate 3: Crusher materials is conveyed to the plant through a 7 km belt conveyor at 500 tph



Plate 4: Fuller vertical roller mill being used for raw material grinding.



Plate 5: Kiln being used in clinker production (*left photo*); IKN Pendulum Clinker Coller (*right photo*)



Plate 6: Cement mill being used in cement grinding



Plate 7: Cement dispatch area

c. Manpower

The current operation of Holcim Davao Cement Plant has a total of 160 permanent employees. During the construction phase, fourteen (14) employees will be hired, of which 4 are regular and 10 will be temporary. After completion of the project, additional ten (10) employees will be hired in accordance with the labor laws and based on qualifications and skills being required.

The current and estimated manpower requirement during construction and operation is listed in **Table 4**.

Table 1. Manpower Requirement

Existing Operation of Holcim Philippines Inc.		
Head Count	Employment Type	Deployment
160	Regular	Various departments
Existing Operation of Holcim Philippines Inc. + Construction Phase		
Head Count	Employment Type	Deployment
156	Regular	For the existing operation
4	Regular	Construction phase of the proposed modification
10	Temporary	Construction phase of the proposed modification
170		
Existing Operation of Holcim Philippines Inc. + Operation of the proposed modification		
Head Count	Employment Type	Deployment
160	Regular	For the existing operation
10	Regular	For the operation of FM2, overhead crane and other support services
170		

General Hiring Policy

Personnel requirements are filled in with the most qualified applicants who possess the required skills, knowledge and behavior, and have the potential for growth within the organization. The company is an "Equal Opportunity Employer" and promotes Diversity and Inclusion, hence it shall not tolerate any form of discrimination on the basis of gender, age, race, religion or civil status. Internal candidates are given priority to align with the principle of employee development.

Employment of PWD/Women/Senior Citizen

Persons with disabilities shall be considered following the concept of fit to job requirements in due consideration with compliance to Health and Safety standards.

On hiring women, the company provides a non-discriminatory workplace. Increasing women in the management team is part of Holcim's 2030 Goal.

Employees are given the option to retire on normal retirement age of 60 or an early retirement at age 55 with 10 years of service. Workers beyond 60 years old may continue to work on a case to case basis. Engaged contractors or consultants have no age requirement.

Direct-hired/Agency-hired and Contractors

Regular employees are based on the approved manpower (Full Time Employee and Table of Organization). Work assigned are those necessary and desirable to the business. The company provides compensation and benefits way above the legal requirements.

The company does not have agency hired workers but engages with valid contractors to provide products and services that can be validly contracted. The contracts of the company and the vendors includes stipulations on compliance with all labor and tax laws and all other related laws bearing on employment. The following are the key processes that a contracted vendor undergoes upon engagement with HPI: Accreditation; Selection; Identification of capable contractors; Tendering; Contract awarding; Pre-start Orientation; Safety Permitting; Project Implementation; and Contractor Performance Evaluation.

XI. Information Where to Get a Copy of the EPRMP

Full copies of the EPRMP can be accessed at the EMB website and the EMB Region XI office, while copies of the EPRMP Summary for the Public are available at the City Government of Davao and the EMB website.