PROJECT DESCRIPTION FOR SCOPING

Proposed Cement Grinding Facility
Barangay Darong, Santa Cruz, Davao del Sur

Submitted to:

Environmental Management Bureau – Central Office

4/27/18

Leading in
Clean Initiatives.

An Environmental Report By:

LCI ENVI CORPORATION

Unit 8L-M, Future Point Plaza 3
111 Panay Avenue, South Triangle
Quezon City, Metro Manila
Tel. No.: (632) 442-2830

Submitted To:

Department of Environment and Natural Resources
Environmental Management Bureau – Central Office
EMB Building, DENR Compound
Visayas Avenue, Quezon City

DOCUMENT TRACKING

Version No.	**Report Compiled By:**	**Checked By:**		**Approved By:**		
		Name	**Signature**	**Name**	**Signature**	**Date**
	BM Magante	JM Lim				
Distribution of Latest Version						
No. of Copies	**Submitted To:**	**Date Submitted**	**Received By:**		**Remarks:**	
X	EMB-CO					
X	OCIC					
X	LCI					

March 2018

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

PROJECT DESCRIPTION

Oro Cemento Industries Corporation intends to put up a cement grinding facility in Barangay Darong, Sta. Cruz, Davao del Sur. The facility will have cement grinding equipment, bulk storage, and other support facilities. It will have a production capacity of 2 million metric tons per year (MMTPY). **Table 1** shows the details of the project, the Proponent, and the EIA Preparer.

Table 1: Proposed Project, Proponent, and EIA Preparer Details

Project Name	**Proposed Cement Grinding Facility**
Project Location	Brgy. Darong, Sta. Cruz, Davao del Sur
Type of Project	Cement (Clinker) Grinding Process
Project Size	2.0 MMTPY Cement
Project Proponent	**Oro Cemento Industries Corporation** **Ferdinand Constantino / Joseph Pineda** Director/s SMC Head Office Complex San Miguel Avenue, Mandaluyong City 1603 Metro Manila, Philippines
EIA Preparer	**LCI Envi Corporation** **Engr. Jose Marie U. Lim** EIA Team Leader Unit 8L-M Future Point Plaza 3 111 Panay Avenue, South Triangle Quezon City, Metro Manila, Philippines Tel. No.: (632) 442-2830 Fax No.: (632) 961-9226

1. PROJECT LOCATION AND AREA

1.1. Project Location

The proposed cement grinding facility will be constructed inside an industrial area in Barangay Darong, Santa Cruz, Davao del Sur. The general location map of the proposed project is shown in **Figure 1**. The geographic coordinates defining the boundary of the proposed project site are provided in the table below.

Table 2: Coordinates of the Proposed Project Site

Point	Latitude	Longitude
1	6.9373186638 N	125.4847068498 E
2	6.9369851785 N	125.4847059891 E
3	6.9363642793 N	125.4849999914 E
4	6.9363133746 N	125.4839625645 E
5	6.9352201662 N	125.4840144376 E
6	6.9349197040 N	125.4839313943 E
7	6.9347395445 N	125.4847670417 E
8	6.9342444697 N	125.4846673677 E
9	6.9341354541 N	125.4851220328 E
10	6.9337664054 N	125.4859419274 E
11	6.9351928088 N	125.4864287456 E
12	6.9348490945 N	125.4878922638 E
13	6.9365119884 N	125.4878833563 E
14	6.9373186638 N	125.4878833563 E

1.2. Project Area

The cement grinding facility will be installed in a portion of a 111,765-square meters property located in Barangay Darong, Sta. Cruz, Davao del Sur.

1.3. Accessibility of the Project Site

The proposed project site is approximately 35 kilometers away (or about 1-hour drive) from the Francisco Bangoy (Davao) International Airport. It is located near the San Miguel Brewery Davao Plant and can be easily accessed by any type of land vehicle via the Pan-Philippine (Maharlika) Highway.

1.4. Vicinity and Impact Areas

As shown in **Figure 1**, the proposed project site is bounded in the north by open land areas (that may be used for other industrial purposes), in the east by the Davao Gulf, in the west by some residential houses, and in the south by open land.

The EIA study area includes direct and indirect impact areas. The direct or primary impact area pertains to the area that will be occupied by the proposed project, while the indirect or secondary impact area covers the nearby communities. **Figure 2** shows the primary and secondary impact areas estimated within the 100-meter and 350-meter-radius of the proposed project site, respectively. The impact area delineation was principally based on the location of settlements surrounding the project.

Figure 1: General Location Map of the Proposed Project

FIGURE NO.:	FIGURE TITLE:
1	**General Location Map of the Proposed Project**

PROJECT PROPONENT:	PROJECT NAME & LOCATION:	REPORT PREPARER:
Oro Cemento Industries Corporation	**Proposed Cement Grinding Facility** Brgy. Darong, Sta. Cruz, Davao del Sur	**LCI Envi Corporation**

Figure 2: Primary and Secondary Impact Areas

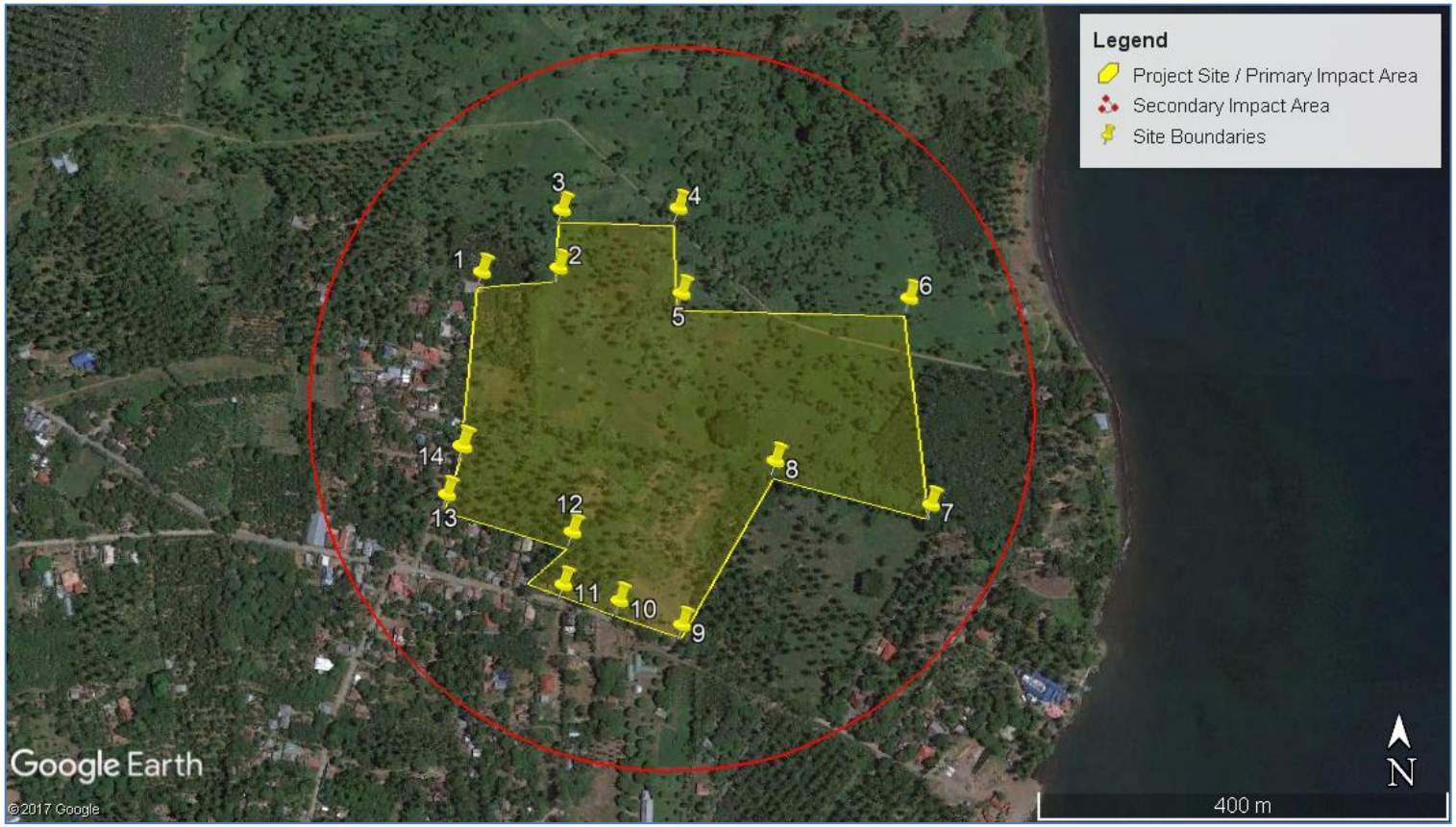

FIGURE NO.:	FIGURE TITLE:
2	**Primary and Secondary Impact Areas**

PROJECT PROPONENT:	PROJECT NAME & LOCATION:	REPORT PREPARER:
Oro Cemento Industries Corporation	**Proposed Cement Grinding Facility** Brgy. Darong, Sta. Cruz, Davao del Sur	**LCI Envi Corporation**

Figure 3: Aerial Photos of the Project Area

FIGURE NO.:	FIGURE TITLE:
3	**Aerial Photos of the Project Area**

PROJECT PROPONENT:	PROJECT NAME & LOCATION:	REPORT PREPARER:
Oro Cemento Industries Corporation	**Proposed Cement Grinding Facility** Brgy. Darong, Sta. Cruz, Davao del Sur	**LCI Envi Corporation**

2. PROJECT RATIONALE

With the increased investments in the residential, non-residential, and infrastructure sector, the construction market in Philippines is expected to grow significantly. Cement is an essential material for the construction industry and national development. A substantial demand for cement is expected to be experienced in the country over the next few years due to major planned construction projects, among other factors.

Oro Cemento Industries Corporation intends to construct a cement grinding facility with a rated capacity of 2,000,000 tons per year (2.0 MMTPY), equivalent to 50 million bags of cement annually. The clinker and other raw materials shall be delivered to this facility for grinding and bagging. The proposed project shall be undertaken to sustain the increasing demand of cement in the country. Development of the new facility will ensure that this demand can be met and will therefore contribute significantly to the sustainability of the construction industry.

3. PROJECT ALTERNATIVE

As part of project preparatory studies, a study of alternatives was undertaken. All locations considered were subjected to a site assessment analysis. The criteria then considered for determining the preferred options include:

- Complimentarily and compatibility between and with various uses of adjacent lands and associated activities they serve
- Consistency with natural resources plans and policies, and environmental regulations, that guide the affected communities
- Relatively stable peace and order situation in the choice area
- Input and participation from local stakeholders and appropriate regional and national agencies
- Cost effectiveness, referring to the value returned to the proponent for the investments to be made, and the contributions to the national and local governments, and the other stakeholders, including contributions to social development and management, environmental protection and enhancement, safety and health, rehabilitation and decommissioning.

3.1.1. Site Selection

The site in Darong was selected since this was already owned by **Oro Cemento Industries Corporation**. The zoning of the project site is also suitable for industrial purposes; the project footprint will not be built on agricultural areas.

3.1.2. Technology Selection

Oro Cemento Industries Corporation chose to implement dry cement production process over the wet cement production process because dry process offers more advantages in terms of resource efficiency. Wet process consumes significantly more water compared to dry process. Less coal will also be used for dry process since less heat is required for the kiln. Dry process is also more energy efficient when coupled with a waste-heat recovery facility since heat from the kiln can be converted to energy, which can be used for the cement plant.

One of the disadvantages of using dry process as opposed to wet process is the air emissions. Dry process generally yields more dust, although this can easily be controlled by watering the area.

3.1.3. Resources

Water Resource

Oro Cemento Industries Corporation will construct a deepwell for its 50 cu.m/day water requirement. In addition, a water reservoir will be constructed to serve as back-up source.

Raw Materials

Clinker and cement additives will be sourced from various local cement plants.

4. PROJECT COMPONENTS

The project components for the cement grinding facility are summarized in **Table 3**. These include the components for cement grinding and support facilities. The proposed facility layout is presented in **Figure 4**.

Table 3: Project Components of the Proposed Cement Grinding Facility

Project Component	Description/Specifications
Raw Materials Storage	Longitudinal storage with 50,000 MT capacity and with mechanical reclaimer
Clinker Storage	6 X 10,000 tons capacity
Dosing Silos	4 silos with various sizes, with weighfeeders
Cement Mill	1-unit Vertical Roller Mill, 250 TPH
Cement Storage	4 X 10,000 tons capacity
Bulk Silo (Steel)	1,500 tons capacity with 2 extensible loading spouts
Cement Packing and Dispatch	3 units of Rotary Packing machine x 90 TPH each
Water Source	Deepwell – For Domestic Use (50 CUM)
Air Pollution Control	Bag filters
Wastewater Pollution Control	Septic Tanks
Pier Facility	Raw Material/Clinker Unloading & Conveyor
Support Facilities	
• Warehouses	
• Administration Building and Staff House	
• Parking and Truck Marshalling Area	
• Water and Wastewater Treatment Facilities	
• Clinic	
• Power Substation	
* Water source and pollution control systems are discussed in detail in the sub-sections.	

Figure 4: Site Layout of the Proposed Cement Grinding Facility

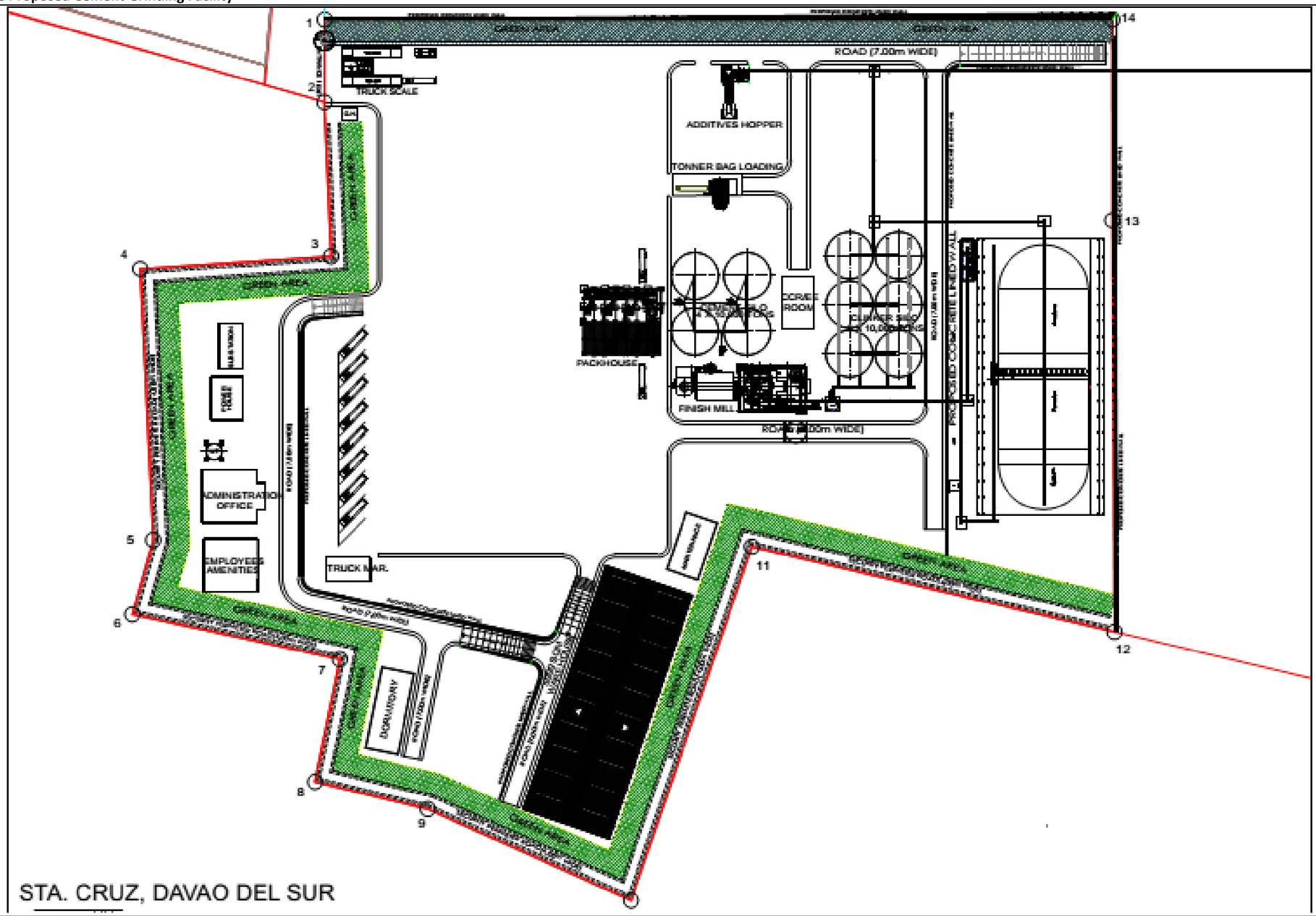

FIGURE NO.:	FIGURE TITLE:
4	**Site Layout of the Proposed Cement Grinding Facility**

PROJECT PROPONENT:	PROJECT NAME & LOCATION:	REPORT PREPARER:
Oro Cemento Industries Corporation	**Proposed Cement Grinding Facility** Brgy. Darong, Sta. Cruz, Davao del Sur	**LCI Envi Corporation**

5. PROCESS/TECHNOLOGY

5.1. Raw Materials Receiving and Storage

Clinker will be delivered by maritime vessels and then conveyed to silos for storage. The other raw materials will be delivered by trucks and stored in the longitudinal storage.

Fly ash will be delivered by truck bulk carriers and transferred and then pneumatically conveyed to storage silo.

5.2. Material Feeding into the Mill

Clinker will be extracted from the bottom of the silos and conveyed to a feed bin from where it will be dosed by a weighfeeder and then further conveyed to an elevator then fed into the grinding mill.

The other raw materials will be mechanically reclaimed by a reclaimer and conveyed to feed bins from where it will be dosed by weigh feeders for conveying and feeding into the grinding mill.

5.3. Cement Grinding

The materials will be ground in a vertical roller mill. They will be pulverized as they are crushed in between the four rollers pressing on a rotating table. Hot air is injected from underneath the nozzle ring outside the periphery of the rotating table. This jet of hot air dries the materials and the fine particles are entrained by the gases exiting thru a rotating classifier at the upper portion of the mill body. The coarse particles are rejected out of the mill and are re-circulated into the mill for re-grinding. The finer particles pass thru the classifier and are carried by the exit gases that will pass thru a bag filter where the finished cement will be separated by the bags and collected at the bottom of the bag filter and subsequently conveyed into the cement silos. There is internal recirculation of the particles that could not pass thru the internal classifier.

5.4. Cement Storage and Dispatch

Cement in the four cement silos are extracted at the bottom by sets of air slides and is conveyed to the bins of the rotary packing machines. Each of the three roto-packers has eight spouts which fill the bags as the machine rotates. The filled bags containing 40 kilograms of cement are conveyed to trucks on where they will be loaded manually.

Cement may also be dispatched in bulk to bulk carriers from a separate bulk cement bin thru expandable bellows. Loading of cement into bulk carriers is controlled by the weight of cement already loaded into the bulk carrier.

5.5. Control of Air Pollution

Various bag filters will be installed in addition to the main bag filter in the finish mill. These modular bag filters will prevent air pollution that may come from conveyors, transfer points, silos, air slides, cement bins, elevators, and other sources.

The roads will be swept clean and regularly sprayed with water to prevent fugitive dust from general open spaces.

5.6. Support Facilities

To receive clinker from sources far from the plant site, a pier will be constructed to accommodate ships of up to 65,000 Mt DWT. Unloading will be done using the cranes of the ships. There will be hoppers on the pier head to receive the materials and underneath the hoppers will be a conveyor that will transport the clinker to the silos inside the cement plant premises.

There will also be a ramp to accommodate RORO vessels (LCTs or barges) handling gypsum and pozzolana.

Modular dust collectors will be installed at the hoppers area and at conveyor transfer points, up to the top of the clinker silos.

In addition, warehouses, administration building, staff house, utility building, and parking and truck marshalling area will be constructed to support the operation of the proposed project.

Figure 5: Pier Facility Perspective

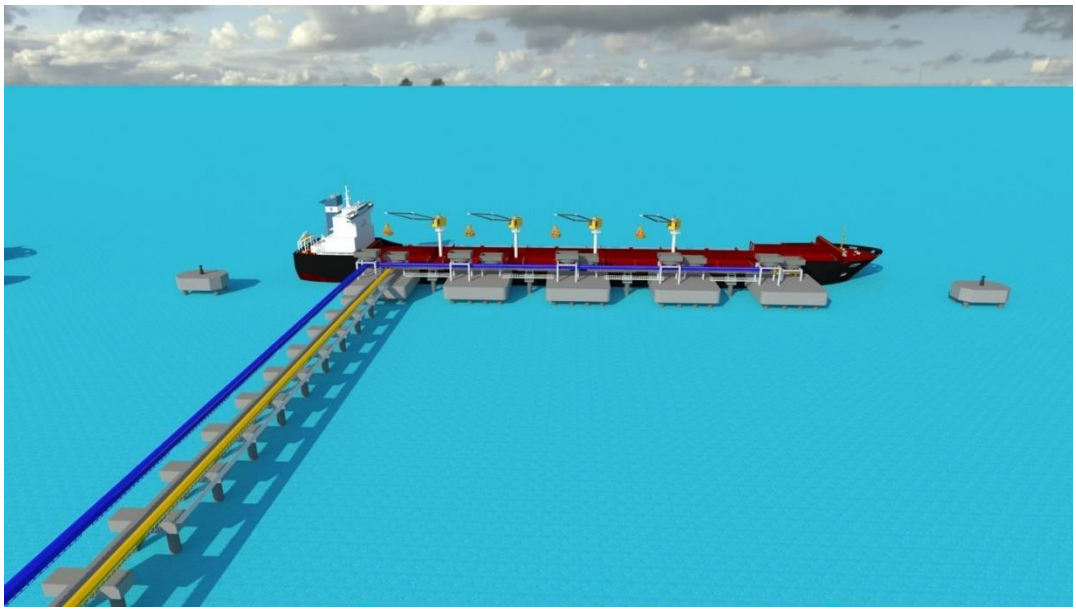

FIGURE NO.:	FIGURE TITLE:
5	**Pier Facility Perspective**

PROJECT PROPONENT:	PROJECT NAME & LOCATION:	REPORT PREPARER:
Oro Cemento Industries Corporation	**Proposed Cement Grinding Facility** Brgy. Darong, Sta. Cruz, Davao del Sur	**LCI Envi Corporation**

Figure 6: Process Diagram of Cement Grinding

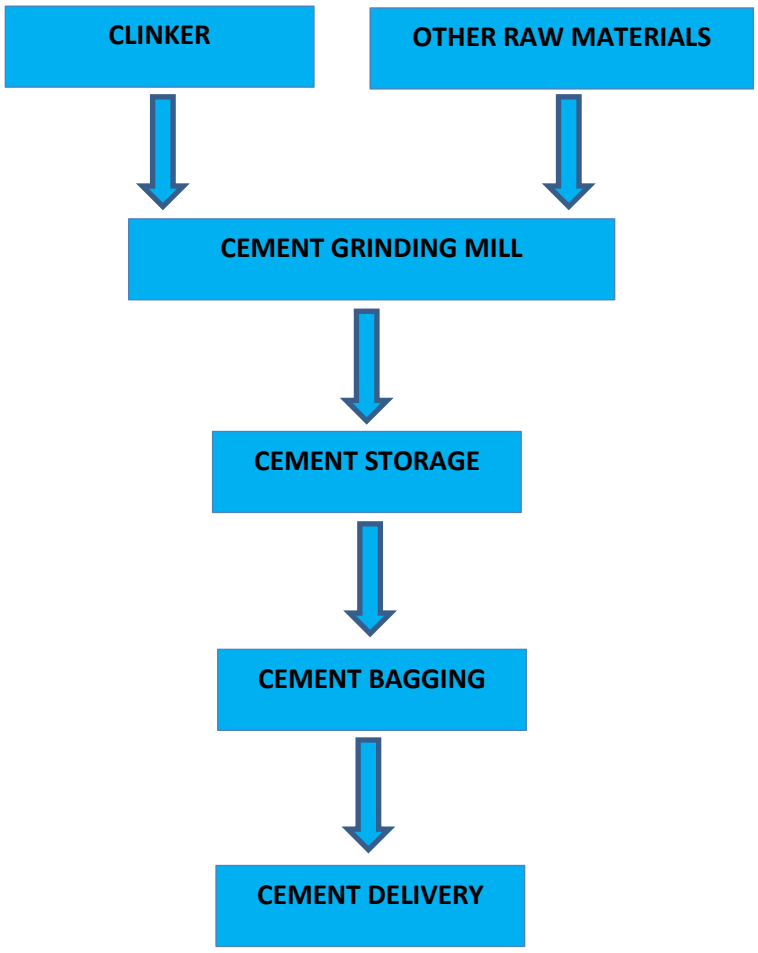

FIGURE NO.:	FIGURE TITLE:
6	**Process Diagram of Cement Production**

PROJECT PROPONENT:	PROJECT NAME & LOCATION:	REPORT PREPARER:
Oro Cemento Industries Corporation	**Proposed Cement Grinding Facility** Brgy. Darong, Sta. Cruz, Davao del Sur	**LCI Envi Corporation**

6. PROJECT UTILITIES

6.1. Pollution Control Devices

6.1.1. Air Pollution Control

The priority is to minimize the increase in ambient particulate levels by reducing the mass load emitted from fugitive emissions and from other sources. Collection and recycling of dust is required to improve the efficiency of the operation and to reduce atmospheric emissions. For control of fugitive particulate emissions, ventilation systems shall be used in conjunction with hoods and enclosures covering transfer points and conveyors. Drop distances shall be minimized using adjustable conveyors. The operations of the air pollution control system are described in the following sections:

- **Bag Filters** – Bag filters are installed at various points in the plant to collect the solid particulates escaping from the system. The bag filters have guaranteed efficiency of 99.99% in eliminating the dust. The bag filters are provided with a fan, driven by an electric motor, to regulate volumetric flow, gas temperature, and static pressure.

6.1.2. Water Pollution Control

The cement grinding facility employs a dry process; hence, the wastewater generated by the facility is limited from domestic sources and run-offs from drainage.

6.2. Water Supply and Demand

Water will be sourced from deep well/s to be installed in the area or from existing nearby water sources. A water reservoir will be constructed for water storage. The proposed project is estimated to use 50 cubic meters of water per day. Since the facility employs a dry-process, the water consumption during the operation will be limited for domestic use and dust control.

6.3. Power Supply and Demand

For the operation, the facility is expected to consume about 8,000 kilowatts (kW) for 24 hours, equivalent to 192,000 kilowatt hour (kWh), of electricity to be supplied by the Davao Light and Power Company.

7. PROJECT SIZE

7.1. Cement Grinding Capacity

The proposed cement grinding facility will have a rated capacity of 2,000,000 tons of clinker per year or 50 million cement bags per year. The proposed facility will be constructed in an 195,749-square meter property leased from San Miguel Corporation and Paul William Uy and situated inside the industrial area in Barangay Darong, Sta. Cruz, Davao del Sur.

8. PROJECT PHASES

8.1. Pre-Construction

Site preparation and clearing will be done prior to the construction phase. Initial development of the area includes the enhancement of road networks for increased accessibility and easier transport of materials and supplies. This phase of the proposed project will also involve the acquisition of the necessary documents before actual construction, such as Environmental Compliance Certificate (ECC), Building Permits, and Permit-to-Operate (PTO) Application.

8.2. Construction

Immediately thereafter, the development of the area shall follow. This involves construction/installation of the cement grinding and support facilities. The equipment to be used will be purchased and assembled on site. Proper occupational safety and health procedures will be implemented to ensure the welfare of the workers.

8.3. Operations

Major activity of the plant entails the 24/7 operation of the cement production. The same strict observation of occupational health and safety during construction will be followed.

8.4. Abandonment

The proposed project is not expected to be abandoned within the next 30 years of its planned operations. However, the abandonment of the facility may be necessary due to the following potential scenarios:

- Unsustainable business operations due to economic downturns;
- Changes in zoning and other related ordinances of Sta. Cruz;
- Transfer of operations to other sites;
- Accidents and emergencies, either natural or man-made, that resulted to severe facility damage and loss of human life; and
- Closure order from government agencies.

9. PROJECT TIME SCHEDULE

The target project schedule for the proposed cement plant is shown in **Table 4**.

Table 4: Proposed Project Schedule

Activities	Proposed Timeline							
	2018				2019			
	1	2	3	4	1	2	3	4
Preliminary Engineering/Major Equipment Orders								
Equipment Manufacturing								
Detailed Engineering								
Site Preparation								
Buildings and Silos Construction								
Equipment Delivery								
Equipment Installation								
Commissioning and Commercial Operation								

10. MANPOWER REQUIREMENTS

Table 5 summarizes the manpower requirements throughout the development phases of the proposed project. As shown, around 200 workers will be employed for the construction of all necessary project components and facilities, and an estimate of 50 personnel, inclusive of engineers and skilled workers, will be hired to run the power plant facility on a 24/7 operation.

Table 5: Manpower Requirement

Project Phase	Estimated Manpower Requirements	Tasks to Perform	Skill Requirement/s
Construction	200	• Civil works, architectural, and electro-mechanical works.	Engineers, project managers, skilled and non-skilled laborers
Operation	50	• Oversee the entire operations of the proposed project, including emergency situations; Ensuring the safety and welfare of its personnel • Maintain conformity of the proposed project to relevant government regulations, including tax payments, ECC compliance, etc. • Promote and uphold a harmonious relationship with the host community	Management and administration skills; over-all knowledge on the operation including key environmental, labor, and local ordinances
Abandonment	10	• Implement the abandonment plan	As required

Oro Cemento Industries Corporation will prioritize hiring of locals whose skills and experience match the specific needs of the project. The proponent will also provide the necessary training of locals for possible hiring as the need arises.

11. PROJECT COST

Indicative cost for the proposed project is estimated to be **2 Billion Pesos**. These will include the following:

- Detailed engineering studies and designs, including the feasibility study (FS) and acquisition of necessary government permits and licenses;
- Site preparation;
- Construction of project components and facilities;
- Procurement of necessary equipment and materials;
- Environmental management and protection, air pollution devices, and water treatment facilities; and
- Environmental monitoring activities.

12. PRELIMINARY IDENTIFICATION OF ENVIRONMENTAL ASPECTS

To address the potential environmental impacts of the proposed project, an environmental management plan will be prepared, presenting the proposed mitigation and/or enhancement measures that can be employed during the different phases of the project development.

Table 6: Key Environmental Aspects Identified and Preliminary Impact Assessment

	Environmental Aspect	Environmental Component Likely to be Affected	Potential Impact/s	Prevention/Mitigation/Enhancement Measures
CONSTRUCTION PHASE	**LAND**			
	Cut and fill activities	Land Use and Classification	Change/inconsistency in land use	▪ The proposed project site is situated within an industrial area; No land use change issues perceived
			Encroachment in an environmentally critical area (ECA)	▪ The proposed project site does not encroach an ECA
		Geology/ Geomorphology	Change in surface landform/terrain/slope	▪ Formulation and implementation of proper grading plan
			Change in sub-surface underground geomorphology	▪ Onsite excavations are expected to cause permanent but low level of disturbance ▪ Strict adherence to geotechnical study recommendations
	Site preparation and earthworks	Pedology	Soil erosion	▪ Implementation of appropriate soil erosion control measures
		Terrestrial Ecology	Vegetation removal and loss of habitat	▪ The proposed project is located within an industrial area and alienable and disposable (A&D) lands. No ecologically sensitive habitats observed.
			Threat to existence and/or loss of important local species	
			Threat to abundance, frequency and distribution of important species	
			Hindrance to wildlife access	
	WATER			
	Water consumption during construction	Hydrology/ Hydrogeology	Depletion water resources/ competition in water use	▪ Implementation of water conservation measures
	Mobilization of construction equipment and materials; Generation of construction wastes	Water Quality	Degradation of groundwater quality	▪ Formulation and strict implementation of waste management plan ▪ Water quality monitoring
	AIR			
	Mobilization of construction equipment and materials	Air Quality and Noise Levels	Degradation of air quality	▪ Formulation and implementation of construction impact management plan ▪ Ambient air quality and noise level monitoring

	Environmental Aspect	Environmental Component Likely to be Affected	Potential Impact/s	Prevention/Mitigation/Enhancement Measures
	PEOPLE			
	Hiring of workers	Local Employment	Increase in local employment	▪ Prioritized hiring of qualified local residents; GAD sensitivity
	Increase in taxes and revenues	Local Economy	Improvement in local infrastructure and social services	▪ Diligent imbursement of taxes and revenues
	Accidents	Public Safety	Possible occurrence of construction-related hazards	▪ Provision of environmental health and safety training prior to construction
OPERATIONAL PHASE	**LAND**			
	Accidental oil spill	Pedology	Soil contamination	▪ Formulation and strict implementation of emergency management plan ▪ Soil quality monitoring
	WATER			
	Generation of domestic wastewater	Water Quality	Degradation of groundwater quality	▪ Provision of wastewater treatment system ▪ Formulation and strict implementation of waste management plan ▪ Water quality monitoring
	AIR			
	Dust generation during cement processing	Air Quality	Degradation of air quality	▪ Ambient air quality monitoring and emissions testing ▪ Operate and maintain filter bags and separators in the equipment.
	Increased levels of TSP brought about by vehicle and equipment emissions	Air Quality	Degradation of air quality	▪ Proper maintenance should be done for the vehicles and equipment ▪ Implement carbon sink programs
	PEOPLE			
	Hiring of workers	Waste Management	Generation of sewage/solid waste	▪ Formulation and strict implementation of waste management plan
		Population	Change in population size and distribution	▪ Prioritized hiring of qualified local residents ▪ Coordination with the local public employment service office
		Social Services	Overburdening of public social services	▪ Prioritized hiring of qualified local residents

	Environmental Aspect	Environmental Component Likely to be Affected	Potential Impact/s	Prevention/Mitigation/Enhancement Measures
		Health	Introduction of disease between migrant and local workers	▪ Medical certificate as part of employment requirements ▪ Formulation and implementation of safety and health program ▪ Provision of health and sanitation facilities within the plant site ▪ Monitoring of occurrence of unusual health problems that may be associated with the project
	Effect of operations on economy	Local Economy	Increased social and economic financial activities	▪ Positive impact; No mitigation required
	LAND			
ABANDONMENT PHASE	**Decommissioning**	Pedology	Soil contamination	▪ Formulation and strict implementation of Abandonment Plan with emphasis on control of sedimentation and prevention of soil contamination
		Terrestrial Ecology	Increase in biodiversity due to rehabilitation activities	▪ Positive impact; No mitigation required
	Disposal of wastes	Groundwater Quality	Possible occurrence of spills and contamination	▪ Formulation and implementation of waste management plan
	AIR			
	Demolition and abandonment activities	Air Quality and Noise Levels	Generation of dust and noise	▪ Watering during dismantling activities to minimize dust generation ▪ Proper vehicle maintenance ▪ Limiting noise-generating activities during daytime ▪ Ambient air quality and noise level monitoring
	PEOPLE			
	Decommissioning activities	Local Community	Possible local disturbance or damage through increased road traffic, noise, etc.	▪ Formulation and implementation of decommissioning impact management plan
	Hiring of workers for demolition and abandonment activities	Local Employment	Increase in local employment during abandonment; Development of new skills	▪ Prioritized hiring of qualified local residents

	Environmental Aspect	Environmental Component Likely to be Affected	Potential Impact/s	Prevention/Mitigation/Enhancement Measures
	Loss of jobs/employment	Local Economy	Reduction in service opportunities for local contractors with established contracts with the project (e.g., maintenance service providers, site transport services, etc.)	▪ Formulation and implementation of Abandonment Plan ▪ Effective human resources management through consultative planning and communication
		Demography	Out-migration of affected project staff to seek job opportunities elsewhere	
NOTHING FOLLOWS				