

**CHAPTER - 2**

**PROJECT DESCRIPTION**

**AND**

**INFRASTRUCTURE FACILITIES**

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### PROJECT DESCRIPTION AND INFRASTRUCTURAL FACILITIES

#### 2.1 JUSTIFICATION OF PROJECT

As the Infrastructure sector is growing very fast in country the cement demand is increasing rapidly. In the With the view of the increasing demand and supply of the Cement in the North-Eastern region, M/s. Rudradev Cement Pvt. Ltd., has proposed to set up 360 TPD Cement manufacturing unit at Village Kisam, 48 No. Block, Mouza-Jamunamukh District Nagaon, Assam.

#### 2.2 PROMOTERS & THEIR BACKGROUND

Mr. Bhagwati Prasad Agarwal aged about 60 years is a graduate in Mechanical Engineering from Guwahati University and has more than 35 years of experience in managing mechanical industry. He is the Managing Director of M/s North Eastern Steel Pvt. Ltd. an establishment of 1984 and running successfully in Jaiguru, Amingoan, Guwahati, Assam.

Mr. Gautam Sureka – 28, son of Shri B. P. Agarwal is a Graduate in Commerce and currently associated with many business companies. He has a good bussiness skills and knowledge. His true vision and apt. business sense is helping his father in the affairs of the family business.

Both the Directors are actively involved in the working of M/s Byrnihat Ispat Pvt. Ltd. which is manufacturing 20000MT p.a. and sold in entire North.East Region along with 1200 MT p.a. of Ferro Silicon Alloys which is market to entire India. The Average Annual Turnover of the Company is 44.20 Cores. The Manpower under the concern directors is somewhere more than 300 people.

#### 2.3 PROJECT COST

The total Project Cost is Rs. 4855.0 Lacs. It includes site development, building, all the plant Machinery and its installation and Environment Protection measures cost. Break up of proposed investment is given in following table-2.1.

**TABLE - 2.1 BREAK UP FOR THE PROPOSED INVESTMENT**

SR. NO.	DESCRIPTION	COST (RS. IN LACS)
1.	Land, Civil & site development	120.0
2.	Building & Civil Work	1203.0
3.	Environmental Protection Measures	348.0
4.	Cost of Housing Colony & Social Amenities	415.0
5.	Plant & Machinery and Utility installations	1972.0
6.	Preliminary and Preoperative expenses	385.0
7.	Contingency & Escalation provisions	98.0
8.	Marginal Money for working capital	314.0
	<b>TOTAL</b>	<b>4855.0</b>

## 2.4 PROJECT SETTING

### 2.4.1 LOCATION

Proposed cement plant of M/s. Rudradev Cement Pvt. Ltd. will be located at Village Kisam, 48 No. Block, Mouza–Jamunamukh, District Nagaon. The total area covered by Nagaon is about 3831.0 sq km. Location map of Nagaon district is shown in figure-2.1.

1. Location:
  - a) Site Village : **Kisam**
  - b) District : **Nagaon**
  - c) State : **Assam**
  - d) Latitude : **26<sup>0</sup> 06' N**
  - e) Longitude : **92<sup>0</sup> 44' E**
2. Nearest Railway Station: **Jamunamukh Railway Station (4 km North West)**
3. Nearest Airport : **Tezpur Airport (62 km North)**
4. Reserved Forest : **Dabaka (2.5 km)**
5. Nearest City : **Guwahati (123.00 Km)**
6. Nearest River : **Jamuna River (2 km)**

### 2.4.2 KEY INFRASTRUCTURE FEATURES AND SETTLEMENTS

#### 2.4.2.1 DISTANCE OF NEAREST KEY INFRASTRUCTURE FEATURES

The distance of railways and National and State highways from the project site are presented in table-2.2 below.

**TABLE - 2.2 DISTANCE OF NEAREST KEY INFRASTRUCTURE FEATURES FROM PROJECT SITE**

<b>SR. NO.</b>	<b>NEAREST INFRASTRUCTURE FEATURE</b>	<b>DISTANCE FROM PROJECT SITE</b>
1.	NH-36	1.0 Km in North Direction
2.	NH-54	7.70 Km in South-East Direction
3.	NH-37	24.23Km in North-West Direction
4.	Railway line	4.0 Km in South-West Direction
5.	Jamunamukh RS	4.0 Km in South-West Direction
6.	Jamuna River	2.0 Km in South Direction
7.	Kopili River	5.07Km in South-West Direction
8.	Dabaka RF	02.5 Km in North Direction
12.	Tezpur Airport	65.00Km in North Direction

*Courtesy: Environment Information Center, New Delhi*

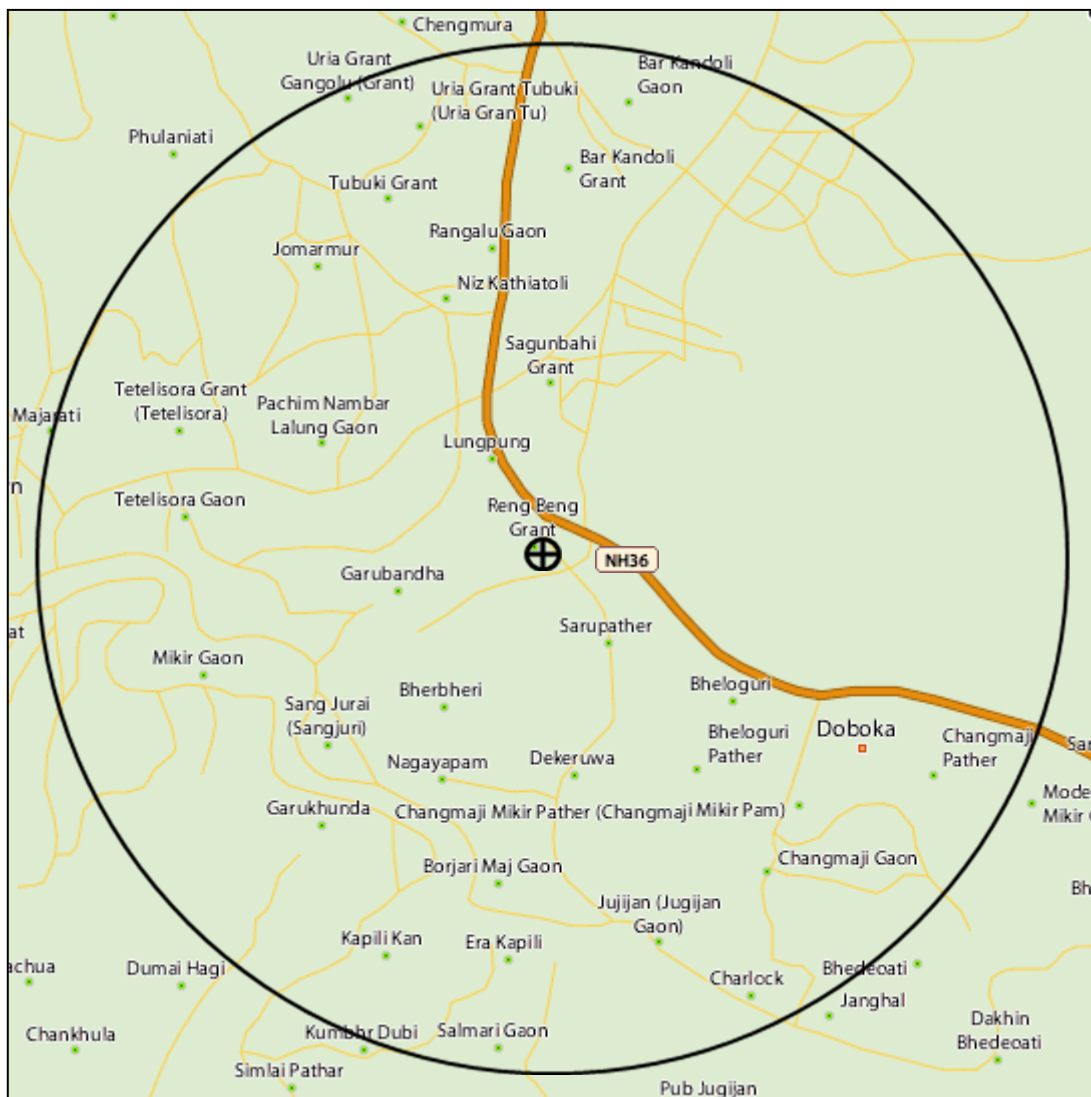
#### 2.4.2.2 MAP OF KEY INFRASTRUCTURE FEATURES AND SETTLEMENTS

A map depicting administrative boundary up to Taluka level, showing National Highway, State highways, Major, medium and other roads with the railway lines is presented in figure-2.2. The major water bodies with the rivers and the river beds are illustrated in the map to provide a better understanding of the project area. The map marks the area within 10 km buffer around the project area.

FIGURE - 2.1 DETAILED MAP OF NAGAON DISTRICT



FIGURE - 2.2 KEY INFRASTRUCTURE FEATURES AND SETTLEMENTS



## 2.5 MAIN PHASES OF THE PROJECT

### 2.5.1 PRE CONSTRUCTION ACTIVITIES

As the project site well connected with road, there is no need to construct any approach road or site access. No significant pre-construction activities are anticipated.

### 2.5.2 CONSTRUCTION ACTIVITIES

The project site is located on level ground, However it requires minor land filling for area grading work. Construction activities will include infrastructure as well as production facilities.

Construction materials, like steel, cement, crushed stones, sand, rubble, etc. shall be required for the project, will be procured from the local market of the region.

### 2.5.3 PRODUCTION AND MANUFACTURING PROCESS

The manufacturing process of cement consists of mixing, drying and grinding of limestone, clay and silica into a composite mass. The mixture is then heated and burned in a pre heater and kiln and then cooled in an air cooling system to form clinker, which is the semi-finished form. This clinker is cooled by air, subsequently ground with gypsum to form cement. Thus the clinker forms the main ingredient in manufacturing cement.

#### 2.5.3.1 RAW MATERIAL CONSUMPTION

Details of the raw materials, their source, mode of transportation and consumption for production of one tone of cement and 360 TPD cement are given in following table-2.3.

**TABLE - 2.3 RAW MATERIAL CONSUMPTION**

SR. NO.	NAME OF THE RAW MATERIAL	CONSUMPTION MT/DAY	SOURCE & THEIR DISTANCE (KM)	MODE OF TRANSPORTATION
1.	Limestone	526	Cherraounji – 250 km Isamati - 200, Meghalaya NC Hilles – 100 Km Assam	By Road
2.	Clay/Shale	90	Nagon Assam	By Road
3.	Iron Dust	9	Byrnihat – 120 km Assam	By Road
4.	Fly Ash	148	Durgapur – 1200 km Bihar	By Road
5.	Gypsum	8	Samdrup – 350 km Jongkhar Bhutan	By Road
6.	Coal	60	Meghalaya – 250 km	By Road

#### 2.5.3.2 RAW MATERIAL TRANSPORTATION HANDLING AND STORAGE

The raw materials will be purchased from the external sources. The raw materials will be transported to the site by trucks. The unloading and storage of the raw materials will be done in the covered raw yards.

### 2.5.3.3 MANUFACTURING PROCESS

The manufacturing process is described as under which based on Rotary kiln technology.

#### 1. Raw material storage and crushing process:

Lime stone from the quarry is transported by means of truck and is fed to a hopper. Likewise, other raw materials such as Bauxite, Clay, Silica, are also brought from various sources and fed into different hoppers. From the respective hoppers, the raw materials pass through Jaw crusher, wherein the raw materials are crushed into small pieces and transferred by conveyor belt to their respective storage yards, the capacity of which is to store one month requirement of the plant. The raw materials are withdrawn from the yard and conveyed by conveyor belt to a hammer mill where it is crushed to minus 15 mm size. This crushed lime stone is then transported through a bucket elevator and finally stored in the storage silo. From storage silo, the raw materials are transferred on weigh feeder, wherefrom it is moved to main belt conveyor to the bucket elevator.

#### 2. Raw material grinding process:

The raw materials are fed into raw mill with the help of Bucket elevator. In the raw mill, the raw materials, are grinded and passes through Rotary valve and classifier and transferred to conveyor and then to bucket elevator for the next process.

#### 3. Raw material blending and storage process:

Pneumatic blending is carried out in both the blending silo and the blended raw materials are stored in the storage silo. The blending and storage unit is dedusted by means of bag filter.

#### 4. Coal storage and crushing process:

Coal is transported by means of truck and is fed to a hopper. From the hopper, the coal pass through Jaw crusher, wherein the coal is crushed into small pieces and transferred by conveyor belt to its storage yards, the capacity of which is to store one month requirement of the plant. The coal are withdrawn from the yard and conveyed by conveyor belt and then transported through a bucket elevator and finally stored in the storage silo. From storage silo, the coal is transferred on weigh feeder, wherefrom it is moved to main belt conveyor to the bucket elevator.

#### 5. Coal grinding process:

The coal is fed into coal mill with the help of Bucket elevator. In the coal mill, the coal is grinded and passes through Rotary valve and Classifier and transferred to conveyor and then to Bucket elevator for the next process.

#### 6. Coal (Powder form) storage:

Coal in powder form is stored in storage silo, wherefrom it is transferred to kiln burner with the help of blower in requisite quantity.

#### 7. Bag House and Chimney (For air pollution control):

The hot gases generated from pre-heaters, kiln and grate cooler is transmitted to chimney via bag house in order to avoid air pollution.

#### 8. Clinkerisation process:

The materials from the blending storage silo are fed into pre-heated cyclones via bucket elevators. From the pre-heaters, the materials pass through the rotary kiln, where the coal is fired through burner. From the kiln, the hot clinker is passed through grate cooler and it gets cooled with the help of air blowers.

#### 9. Clinker storage:

The cooled clinker received from grate cooler is stored in the clinker dome with the help of deep Bucket elevator and it gets transferred through underground conveyor belt for the next process.

**10. Gypsum/Fly Ash storage:**

Gypsum and Fly Ash are stored in the storage yard, wherefrom it is transported to storage silo through Conveyor belt and Bucket elevator.

**11. Cement grinding process:**

The clinker and the gypsum from the storage silos are extracted through a weigh feeders and fed into main Belt conveyor and wherefrom it is transmitted to cement mill for grinding via Bucket elevator and passes through Rotary valve and Classifier and transferred to Conveyor and then to Bucket elevator for the next process.

**12. Cement storage, packing and transportation:**

The finally produced Cement is stored in a Cement storage silo. The Cement is extracted from this silo through a Rotary feeder and after passing through a Rotary screen is finally packed in a bag by a 4 Spout rotary packing machine. The bags are dispatched through dispatch Belt conveyor and loaded on truck.

**13. Central Control Room and Laboratory:**

In order to ensure safety of the equipment as well as for high quality product and operational efficiency necessary instrumentation control system is established in the Central Control Room. All major system parameters shall be indicated and recorded. Wherever necessary inter locking for the equipment have been provided. The laboratory is going to be set up matching international standards. All the quality tests will be conducted in the laboratory with latest equipments.

**14. Power supply unit:**

A suitable power receiving and distribution system for the whole plant is provided.

**15. Specialized division for Disaster management, Environment Control and Fire & Emergency****Safety system (DM, EC and FESS):**

We are going to establish and set up a specialized division for Disaster management, Environment, control and fire & Emergency safety system with state of art methods, techniques and equipments in order to safeguards the plant, people in the plant , surrounding environment and society at large from any disaster, environment imbalance or fire and emergency situations.

**16. Ancillaries and services:**

The plant is provided with ancillaries and services like laboratory, workshop, stores, and go downs. The plant is also provided with suitable water supply systems.

**2.6 INFRASTRUCTURE FACILITIES****2.6.1 LAND**

Company has acquired around 15.17 acres (61405.2 sq.m.) of private land having following Dag & K. P. Patta No. of village Kisam, District Nagaon, Assam.

Dag No.	Patta No.
87	40
142	48
86	95
135	95
87	40

**2.6.2 TRANSPORTATION FACILITIES**

As project site is well connected through road. Hence Transportation of all the raw materials and products shall be primarily by road only.

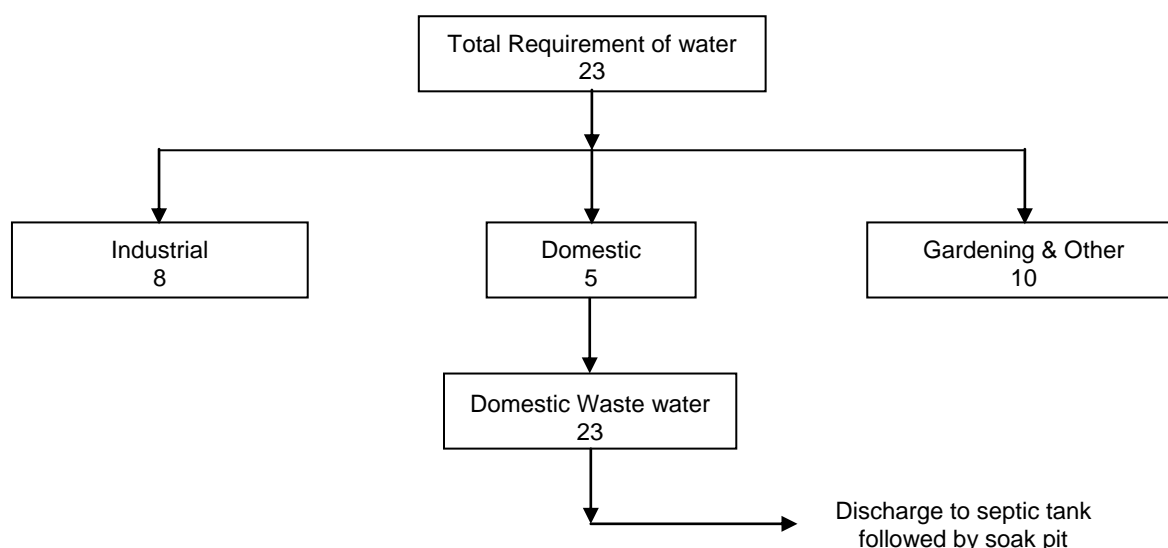
**2.6.3 WATER SOURCE AND UTILIZATION**

Daily water requirement for the proposed project shall be 23 KL/day and would be met through Ground water using bore well. Water requirement is primarily for industrial use, domestic use and for gardening & other. Details of water requirement & waste water generation is given in following table-2.4.

**TABLE - 2.4 WATER CONSUMPTION & WASTE WATER GENERATION**

SR. NO.	USE FOR	WATER CONSUMPTION KL/DAY	WASTE WATER GENERATION KL/DAY
1.	Industrial Purpose	8	-
2.	Domestic Purpose	5	4.5
3.	Gardening & Other	10	-
	<b>TOTAL</b>	<b>23</b>	<b>4.5</b>

**FIGURE - 2.3 WATER BALANCE DIAGRAM**



**Note: All the figures are in KL/Day**

**2.6.4 POWER REQUIREMENTS**

Total power requirement will be 3000 KW and shall be taken from Assam State Electricity Board, during power failure or emergency a stand by D. G. Sets of 1500 KVA shall be utilized.

**2.6.5 FUEL REQUIREMENTS**

Coal at the rate of 60 MT per day will be required as a fuel in the kiln which will be procured from Meghalaya.

**2.6.6 MANPOWER REQUIREMENTS**

In the proposed unit 95 persons will be employed including skilled labours, unskilled labours and office staff. The skilled labours, unskilled labours and office staff would be available from local area itself.

**2.7 SOURCE OF POLLUTION AND CONTROL MEASURES**

**2.7.1 WATER POLLUTION**

No industrial waste water shall be generated from the proposed project, but only domestic waste water 4.5 KL/Day will be generated. Entire quantity of domestic waste water generated shall be treated through a septic tank followed by soak. Details of wastewater generation from proposed project are given in the table- 2.4.

### 2.7.2 AIR POLLUTION

The major pollutant is particulate matter from the proposed cement plant. The unit will install cyclone separators, bag filters and wet scrubber to control air pollutants. The stacks will be attached to the air pollution control equipments to disperse the air pollutants to the satisfactory levels. The details of proposed stack and pollution control equipments are presented in the following table-2.5.

**TABLE - 2.5 DETAILS OF STACK**

NO. OF STACK	STACK ATTACHED TO	STACK HEIGHT & DIAMETER	POLLUTION CONTROL EQUIPMENT	POLLUTANTS
1.	Clinker Kiln Cooler	30 M & 1.5 M	Electro Static Precipitator	SPM < 50 mg/Nm <sup>3</sup> SO <sub>2</sub> < 100 ppm NO <sub>x</sub> < 50 ppm
2.	Raw mill Unit	30 M & 1.5 M	Twin cyclone Separator followed by bag filter	SPM < 50 mg/Nm <sup>3</sup>
3.	Coal mill Unit	15 M & 0.5 M	Reverse pulse jet type bag filter	SPM < 50 mg/Nm <sup>3</sup>
4.	Cement Grinding Unit	15 M & 0.5 M	Reverse pulse jet type bag filter	SPM < 50 mg/Nm <sup>3</sup>

The emissions of particulate matters from above five stacks will be limited to 50 mg/Nm<sup>3</sup> as per CREP guidelines given by Centre Pollution Control Board.

### 2.7.3 NOISE POLLUTION AND CONTROL SYSTEM

Extensive oiling and lubrication and preventive maintenance shall be carried out to reduce noise generation at source to the permissible limit. However, at places where noise levels may exceed the permissible limit, Earplugs will be provided to those working in such area.

### 2.7.4 LAND/SOIL POLLUTION AND CONTROL MEASURES

Dust collected from air pollution control equipment is 100% recycled in the process. Other solid wastes will be used/spent oil and discarded drums or bags. The source of solid wastes, generation and its management are given in following table-2.6.

**TABLE - 2.6 DETAILS OF SOLID WASTE GENERATION AND DISPOSAL METHOD**

SR.NO.	SOLID WASTE	SOURCE	WASTE MANAGEMENT DETAILS
1.	used/spent oil	Prime Movers	Reused in plant for lubrication or sell to authorized recyclers
2.	discarded drums or bags	Storage	Return to raw material supplier or sell to authorized recyclers

### 2.7.5 FIRE FIGHTING ARRANGEMENTS

Adequate numbers of fire fighting equipments and fire extinguishers will be installed as per requirement of the fire risk in all sections / departments.

### 2.8 GREEN BELT AND PLANTATION DETAILS

To maintain the ecological balance, M/s. Rudradev Cement Pvt. Ltd. authorities have proposed to develop green belt in and around the plant. Green belt recommendations made around the project site evolve for noise pollution control, balancing eco-environment, soil erosion /protection, economic sustenance and aesthetics. The scenario of planting arrangement made and size based on the optimum use of available land. Total land allocated for green belt development plan shall be 33% of the total plant area as per CPCB guidelines.