

Detailed Project Report- Basti Silo

Introduction

The National Collateral Management Services Limited (NCML) is the country's leading organization providing a bouquet of commodity based services under a single umbrella. Since its incorporation in 2004, NCML has empowered a multitude of stakeholders in the commodity value chain in managing their risks. NCML is governed by an independent and professional Board.

NCML is Fairfax Group Company. Fairfax India Holdings Corporation, Fairfax India is an investment holding company whose objective is to achieve long-term capital appreciation, while preserving capital, by investing in public and private equity securities and debt instruments in India and Indian businesses or other businesses with customers, suppliers or business primarily conducted in, or dependent on, India. Fairfax India, is a Group Company of the Prem Watsa led Fairfax Financial Holdings which is based in Toronto, Canada and is listed on the Toronto Exchange. NCML is also promoted by NCDEX, IFFCO, leading banks and reputed organizations.

NCML is working on a grain storage mechanism project on PPP Model with FCI (Food Corporation of India). FCI has been appointed as nodal agency by the Government of India for creation of modern storing capacity through construction of food grain silos of 13.5 lakh MT capacity at 27 locations through Public Private Partnership mode on Design, Build, Finance, Own, and Operate ("DBFOO") basis. FCI has awarded 11 locations to NCML to build Silo project on Design, Build, Finance, Own, and Operate ("DBFOO") basis. NCML Basti Pvt. Ltd is one of the SPV's to establish Silo project in Basti on Design, Build, Finance, Own, and Operate ("DBFOO") basis.

Board of Directors

The Company is governed by a professional board, consisting of eminent experts and professional personalities from different fields. The Board includes two independent Directors. The details of the Board Members are furnished below:

S.No.	Name	Designation	Official/Residential Address	DIN No.
1.	Mr. Pankaj Tomar	Director	National Collateral Management Services Limited 6 th Floor,Medicity,Gurgoan ,Haryana - 122001	06716930
<u>2.</u>	Mr. Ravi Shankar	Director	National Collateral Management Services Limited 6 th Floor,Medicity,Gurgoan Haryana - 122001	10153782

Project Management Team

It is relevant to note that the Company has already in place a large and experienced professional project management team led by Mr. Pankaj Tomar and supported by a team of engineers, quality inspectors, legal professionals and accounts team ensuring that the project implementation is smooth and within the prescribed time lines. The business team, has also drawn up proper business plans.

S. No	Name	Designation
1	Mr. Sanjay Gupta	MD & CEO
2	Mr. Ambrish Sharma	CS & Head Legal
3	Mrs. Lokesh Sharma	Head - Human Resources & Administration & Corporate Communication
4	Mr. Pankaj Tomar	Project Chief

Basti – Geography

Basti district is one of the districts of Uttar Pradesh state, India and Basti town is the district headquarters. Basti district is a part of Basti Division. In the freedom struggle of 1857, about 250 martyrs of Amorha State were hanged by the British Government from peepal trees located at Chhawani.

The district lies between the parallels of 26° 23' and 27° 30' North Latitude and 82° 17' and 83° 20' East longitude. Its maximum length from north to south is about 75 km. and breadth from east to west about 70 km. The district lies between newly created district Sant Kabir Nagar on the east and Gonda on the west. On the south, the Ghaghra river near Amorha Khas previously known as Amorha Province or State of Raja Zalim Singh separates it from the Faizabad and newly created district named Ambedkar Nagar. While on the North it is bounded by district Sidharth Nagar.

Location

The selected land parcel of 17.98 acres is located in Tinich of Tehsil & Dist. – Basti (UP).

General features of project: -

1. Grain intake MHE @150TPH capacity, Grain off take MHE @ 60 TPH capacity & Grain intake/off take MHE @ 350TPH/700TPH Capacity.
2. Pre Storage hopper bottom Silos having capacity 250 MT or 500MT – 2 No's or 1 Nos.
3. 4X12500 MT silos complete with catwalk as per MHE, Eave railing, and inside & outside ladder temperature monitoring, sweep auger, aeration floor & fans, close loop fumigation system etc.

4. 1X4000 MT silos complete with catwalk as per MHE, Eave railing, and inside & outside ladder temperature monitoring, sweep auger, aeration floor & fans, close loop fumigation system etc.
5. Bulk truck load out bins of 60 MT.
6. Gates (Electrified and Manual), Diverter valves for MHE.
7. Grain cleaner @ 150 TPH capacity with aspiration system.
8. Wagon loading system @ 700 TPH Capacity.

Project Scope - Basti

It is proposed to launch a 50000 MT capacity silo for storage of wheat which has a potential to function with Modern (Bag + Bulk) Storage; wherein the complex will provide an array of services including pre-cleaning, storing and bagging. It is not only convenient but also cost effective for depositors, who do not need to incur the cost of unloading & loading as well as bagging.

The conceptual plan, components and layout for the silo complex for bulk storage. The silo complex, including silo storage, handling facility along with rail siding, should be designed and built with the following objectives:

- Ensure safe long-term storage of Food Grain.
- Efficient handling of Food Grain with minimum losses
- Integration with present collection and distribution systems of FCI
- Optimize capital investment
- Enable efficient operation and maintenance ☐ Ensure safety and security.

Options for Configuration of Silo Storage Complex

Silo complex will provide facility for safe long-term storage for food grain in all facilities, the handling requirement will vary depending upon the location of the silo. The silo facilities will be located in

- ☐ wheat producing areas

The above mentioned options will having the facility for receiving food grain in bulk and bagged form by road and off take / issue in bulk and bagged form and by rail and road.

Silo Storage Configuration

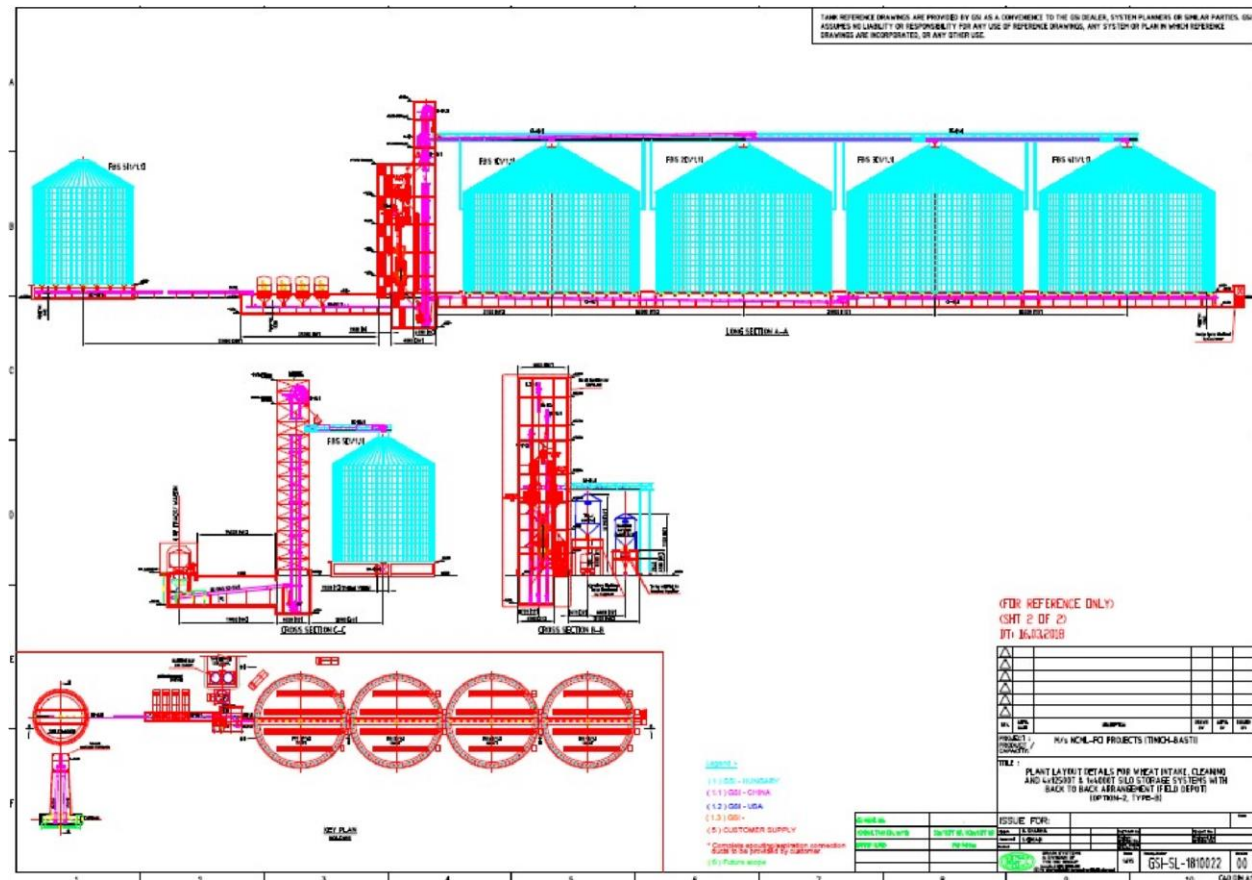
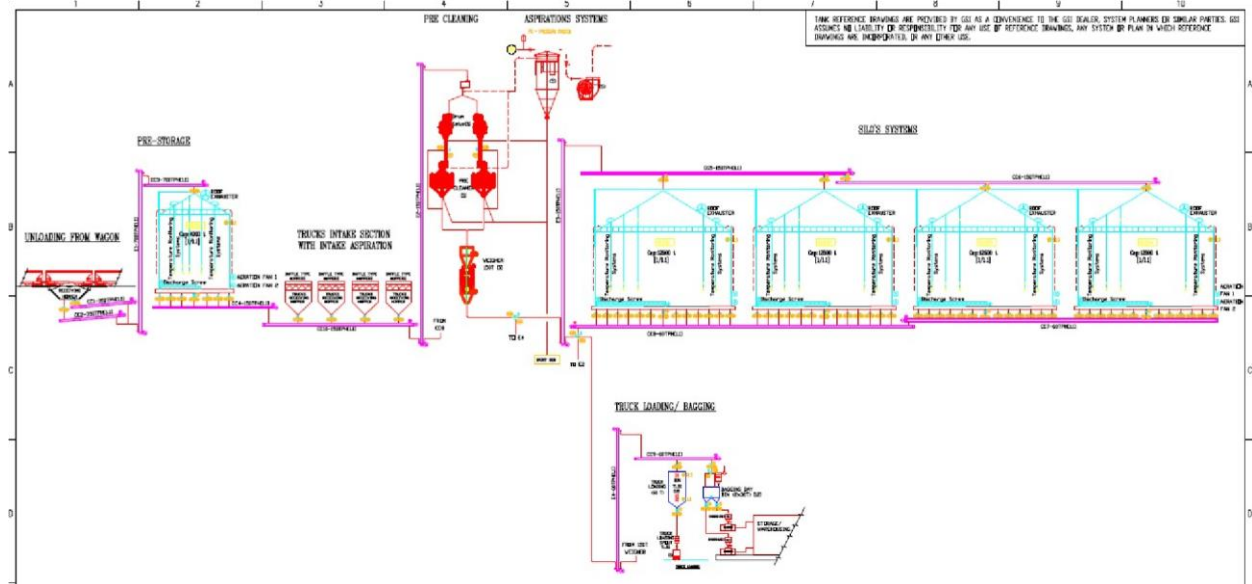
Parameter		Option 1	Option 2
Long term silo storage capacity		50,000 MT	50,000 MT
Intake	By Rail	No	In bulk & bag
	By Road	In bulk & bag	In bag (at railway siding intake)
Off take/Issue	By Rail	In bulk & bag	No
	By Road	In bulk & bag	In bulk & bag

Silo Complex Layout:

The Silo Complex will have the following components:

- Separate Entry and exit for the vehicles
- Electronic Weigh bridges for gross and tare weight at the middle of the entry and exit
- Truck parking for about 20nos. 3-axle trucks, 4 cars and 24 two-wheelers
- Administration office at a suitable location
- Laboratory for quality testing
- Unloading station for receiving the bags for bulking or bulk trolleys
- Pre-Storage silos and its material handling equipment's
- Process tower
- Long term storage silos
- Fumigation system
- Bulk Truck loading system
- Bagging facility and bags storage warehouse
- Railways siding
- Electrical Sub station

Process flow:-

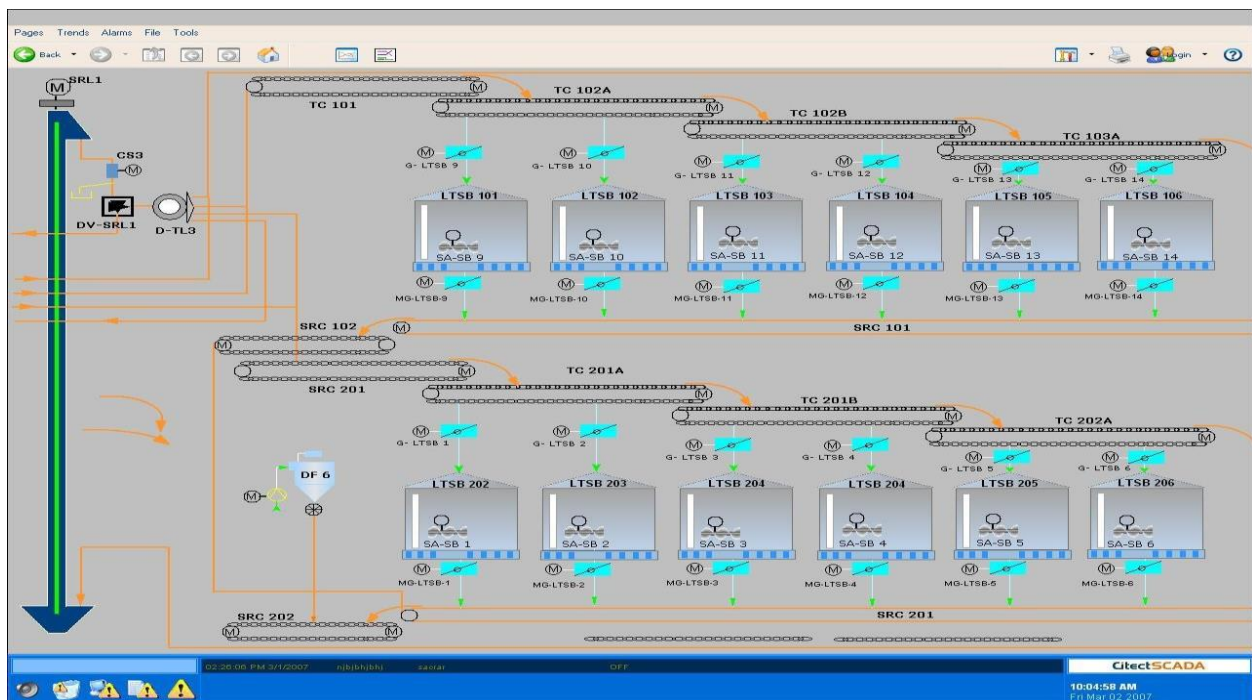


Details of typical agricultural SILO project: The Silos conceptualized here is flat bottom. The Silo comes from the factory in a collapsible form in the form of 2 feet by 3 feet GI corrugated sheets. It has holes in it as per the design. The sheets along with the stiffeners all installed at the site. A Silo of 12,500 MT capacity will have 32 meter dia and 26 meter high (it varies from vendor to vendor and also on capacity of Silo's selected). The roofs will be inclined and will have a gradient of 30 degrees minimum. The other components of the Silos are as follows:

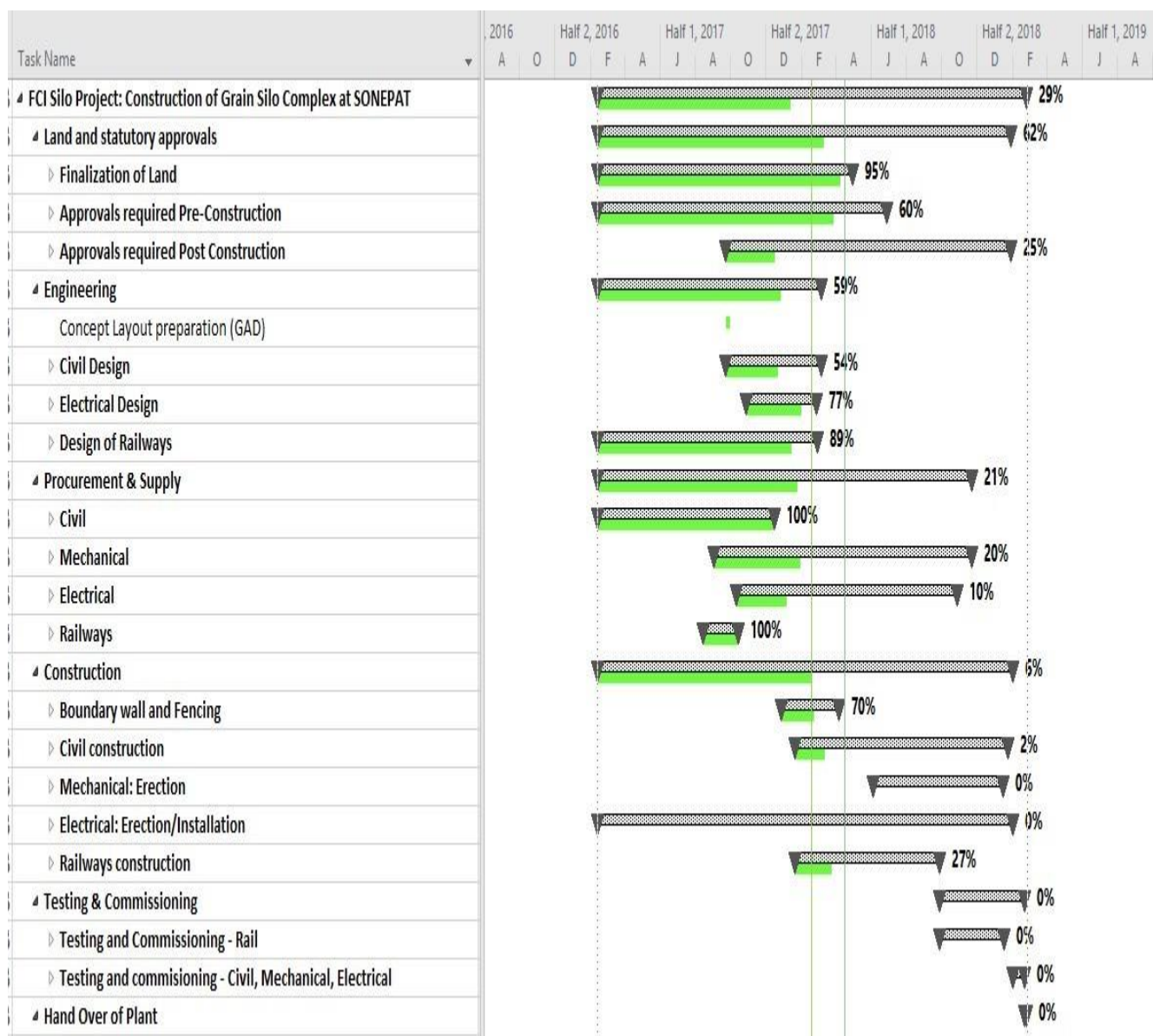
- Ventilators and stationary vents which help in the ventilation of the Silos for long term storage. Stationary vents keep on exhausting the hot air perpetually. The ventilators which are electrically operated help in evaporating the condensation during the temperate environments.
- Aeration floor and aeration fans: Different types of aeration floors are available in the markets which are more or less equally efficient. Double H, double F or 100% perforated floors are available. Aeration fans are joined with the aeration floors in case aeration is required to be done to cool the grains in emergency or chilling the grains. Now a day the fans facilitate the fumigation as well. Aeration is generally achieved very slowly as to avoid any type of moisture gain or loss. Full aeration could complete in about 175 to 200 hours.
- Temperature monitoring system: Health of any biodegradable material which may be dead or living is best known by its temperature. If the temperature is higher than atmospheric then the health of the grain is not good which needs attention. In the system temperature cables are vertically installed having thermocouples at an interval of about a meter. Number of temperature cables installed almost represent whole of the grains. The online reading of each thermocouple is conveyed to the CPU which can be seen on the computer screen. The data could also be stored till the time required. An interlocking signal could be signaled when some zone of the Silo indicates higher temperature of about 2 degrees more than its surrounding thermocouples. The higher temperature could be due to growing infestation or some other reasons. In the case the temperature is increasing aeration fans could be operated or the grains be transferred to other Silos via pre cleaner bringing the temperature down to the atmospheric.
- Sweep auger: The Silos have gravity flow till its 80% of the volume balance 20% is extracted by the sweep augur. The sweep augur rotates on a traction wheel and has screw conveyor. While rotating it sweeps the floor and push the grain in the center for complete evacuation.
- Fumigation: As methyl bromide is been banned world over only phosphine gas is been used for the fumigation purpose. Preventive fumigation is performed after loading the grains into the Silos. Curative fumigation is performed if infestation takes place. Phosphine generator does the fumigation by joining conduits near the aeration fans in the bottom and stationary vents on the top. The phosphine gas is instantaneously produced in the generator and pushed at the bottom of the Silos and the air is sucked from the top. The gas concentration when consistently achieved at about 280 ppm the air circulation is stopped and the Silo is kept at this level for two weeks. Before commencing the fumigation all the

vents, ventilators, discharge ports etc. are sealed to make the Silo airtight so the phosphine gas should not leak. The fumigation can also be achieved by a close loop system through the aeration fans.

- Silos grain intake and reclaim: Bucket elevator takes the discharge from the online weigher and conveys the grains to the chain conveyor installed on the top of the Silos. The conveyor conveys the grain in to the top hole of the Silos. The top intake of the Silos or the hole has its pneumatic gate. The gate is activated by the automation system after proper calibration if the system taking into account first in first out (FIFO). When the Silo needs to be evacuated then the conveyor installed in the tunnel of the Silos is fed grains from the center discharge port that too is fitted with the pneumatic gate valve operated by the PLC system. The conveyor takes the grain into an elevator which elevated the grain into the surge bins of the either bulk truck load outs or the bagging plant
- Bulk truck load out: The discharge of bigger Silo's is coming to Bulk Silo of 100MT. The truck is kept below the center of the Bulk Silo and the gate valve is opened to fill the truck.
- Wheat bagging plant: Bagging unit is based on load cell's gravimetric weightment. Preset weight are calibrated for continuous discharge of the accurate weighing in to the bag. The weightment is automatic but bag placing is manual. The Weighed bag is dropped on to the slat conveyor which has a stitching head at the Centre and the stitched bag is either conveyed on to a another conveyor or manually the bag is shifted to either for stacking or for direct loading. There would be two bagging units @30 TPH and the bagging units shall have a surge bin of about 30 MT for uninterrupted bagging operations.
- Electrical and automation system: A 500 KVA transformer shall be installed for a grid power supply. Power control Centre (PCC) will have a parallel bus bar system to have power back up from DG set to critical equipment operations. PCC shall supply power to MCC which may have inbuilt automation system. The automation panel is carefully designed to interlock the motor starters for safe operations and proper sequencing of the operations as well. The MCC panel as a hardware is controlled by the PLC and will be operated on the CPU through computer screen. The whole process flow sheet will be visible on the screen indicating the area of operations and the system can be put on auto mode or a manual mode. Inventory data, break down data, temperature data shall be stored for any kind of autopsy or paperless reconciliation or audit of the stock. The automation software can be made compatible with a communication port for any given type of ERP software. The data could be shared online from any remote location.
- Wagon loading system: - Rail wagon loader is having overall capacity of 700 TPH. The off take from 4000 MT flat bottom silo is with 350 TPH x 2 No's conveying system, weighing arrangement followed by wagon loader with telescopic chutes.



Project Schedule:-



Project Cost:-

The overall cost of Project is divided in three major segments:-

- Land Cost: - INR 7, 96, 60,000.
- Civil and Railway: - INR 27, 75, 00,000.
- Plant and Machinery: - INR 24, 22, 89,500.
- Total (Approx.): - INR 59, 94, 49, 500.
- Loan & Equity ratio: - 80: 20

Project Operation and Maintenance Planning

Operation Staff

Silo project will have a separate team of one Silo Manager-cum-silo operator, two fitters & two electrician, Security guard, two Quality controller and one weighbridge operator for running the day to day operations of the complex. They will be monitored by the cluster managers with over all control from Regional office.

Maintenance Planning

We will develop daily, weekly, monthly & yearly maintenance calendar to maintain the health of equipment's. The Silo Manager shall be responsible to maintain the silo facilities and report any operational issues and to get it repaired by the engineering team.