CEMENT & ALLIED MATERIALS HANDLING UNIT AT ERNAKULAM WHARF, COCHIN PORT, KERALA for M/s MALABAR CEMENT LTD.

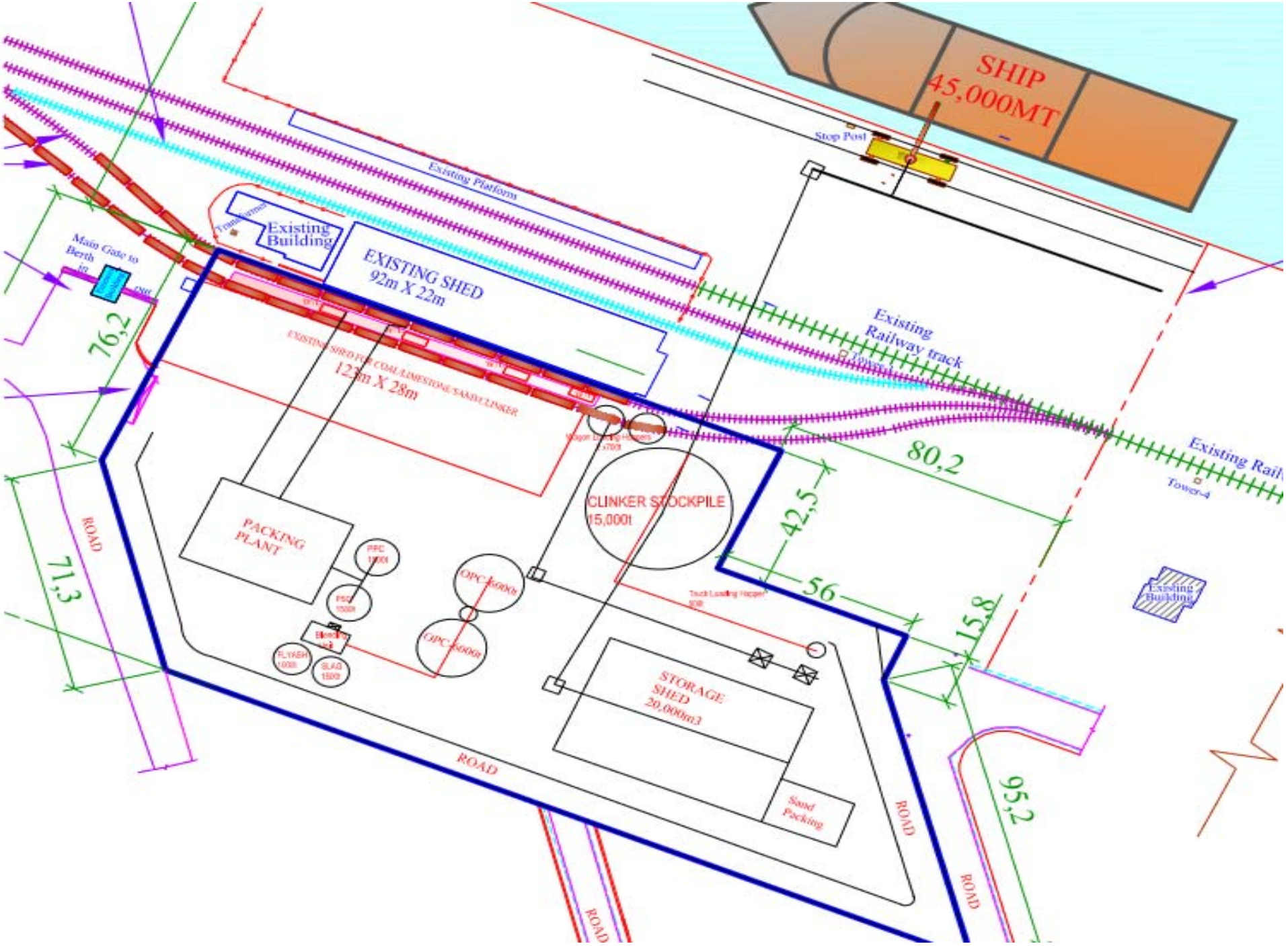
PROJECTED THROUGHPUT

- Setting up a 600,000 MTPA Cement Blending Unit
- Handling of allied materials i.e.:

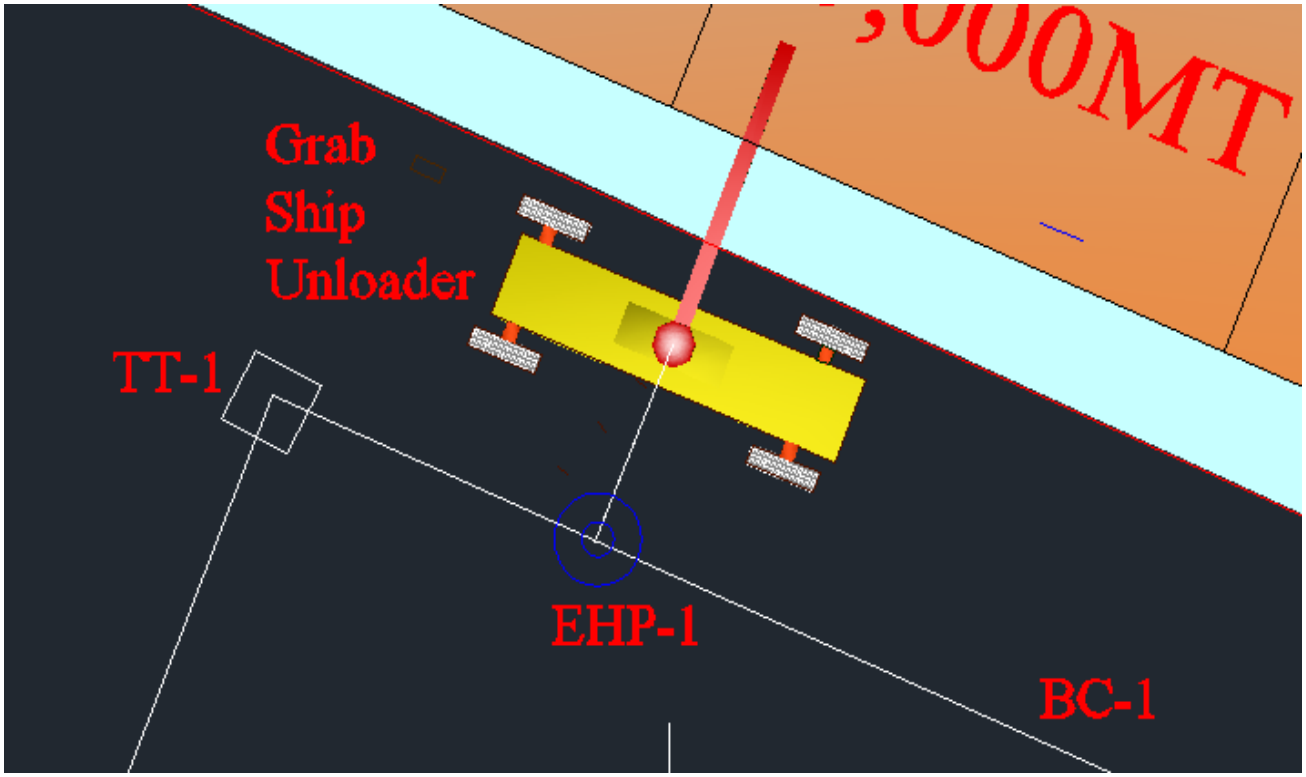
Sl. No.	Material	Quantity - MT/Annum
1.	CLINKER	200,000
2.	COAL	50,000
3.	LIMESTONE	120,000
4.	SLAG	50,000
5.	CEMENT	600,000
6.	SAND	300,000
	TOTAL	**1,320,000**

- Unloading of complete ship within 7 days max
- Dust Free operation and environmental sustainable system
- Safe operation and maintenance of the system
- Limiting the initial investment upto 160 Crores

PROPOSED LAYOUT – NEAR ERNAKULAM WHARF

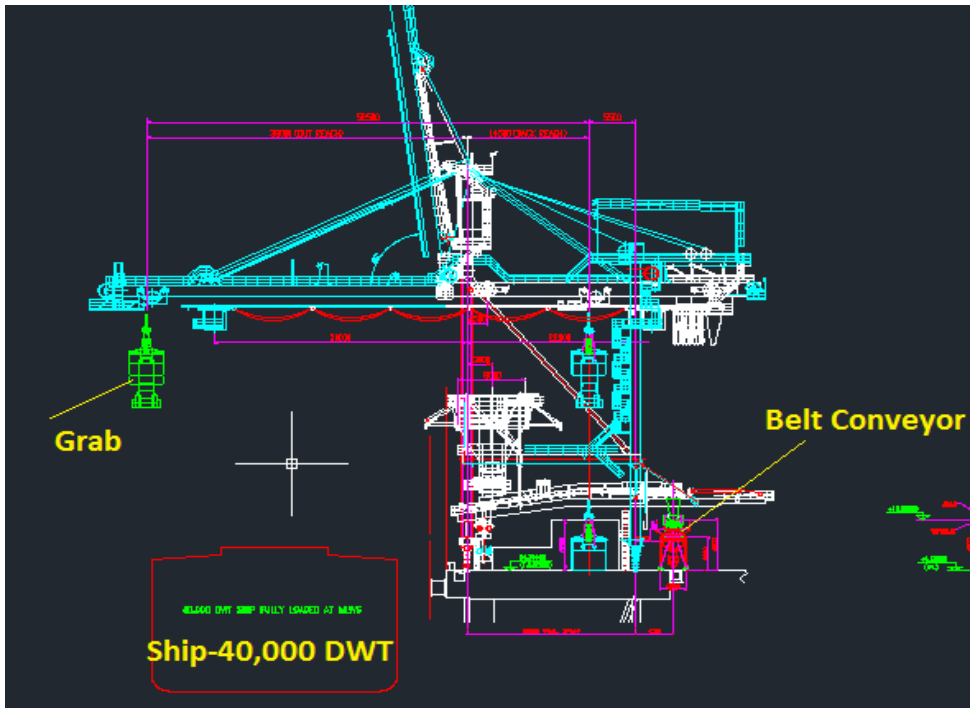


SHIP UNLOADING SYSTEM



"MCL shall hire the grab type unloader for unloading of clinker/coal/limestone"

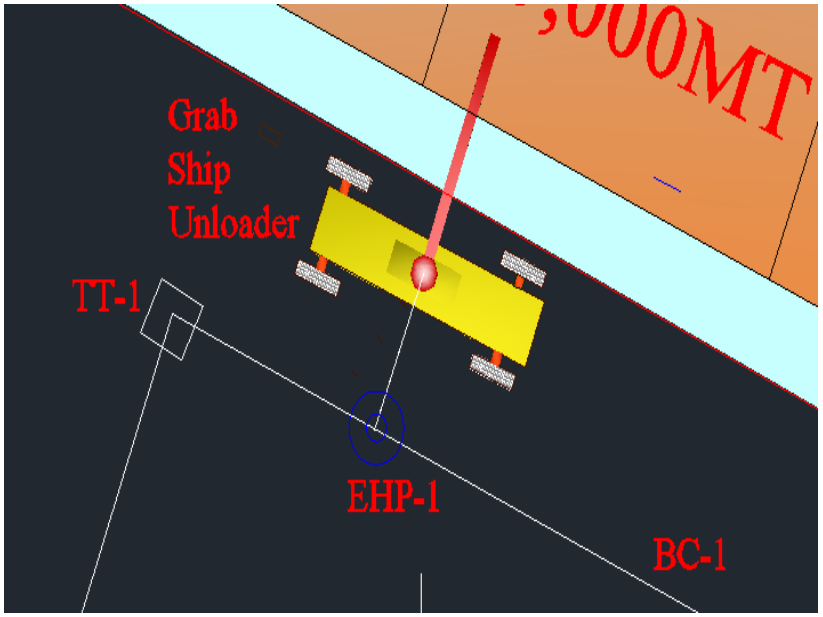
SHIP UNLOADING

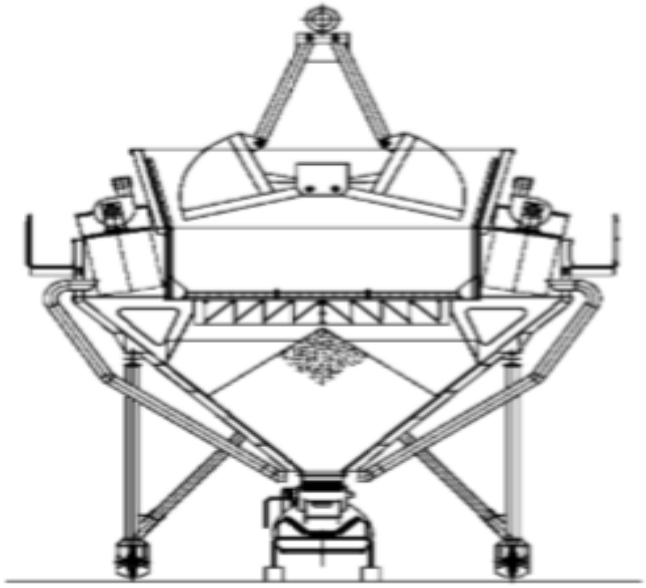


- MCL shall hire the grab type unloader for unloading of clinker/coal/limestone.
- Cement/sand shall be received in dedicated cement/sand carrier and will be pneumatically unloaded by ship mounted compressors.

- Eco hopper has been considered for material receiving from grab as Eco-hoppers is equipped with effective dust control system to minimize the dust nuisance.

SHIP UNLOADING





- Unloading Capacity: Capacity has been worked out 500tph (12 hrs. working per day, capable to unload 40,000MT ship in 7 days), Conveying system shall be design with sufficient margin and will be able to unload 700tph coal and 1000tph clinker.
- Grab unloader shall discharge the material on Eco-hopper, installed just above the jetty belt conveyor and covered Belt conveyor will further transport the material to the respective storage.

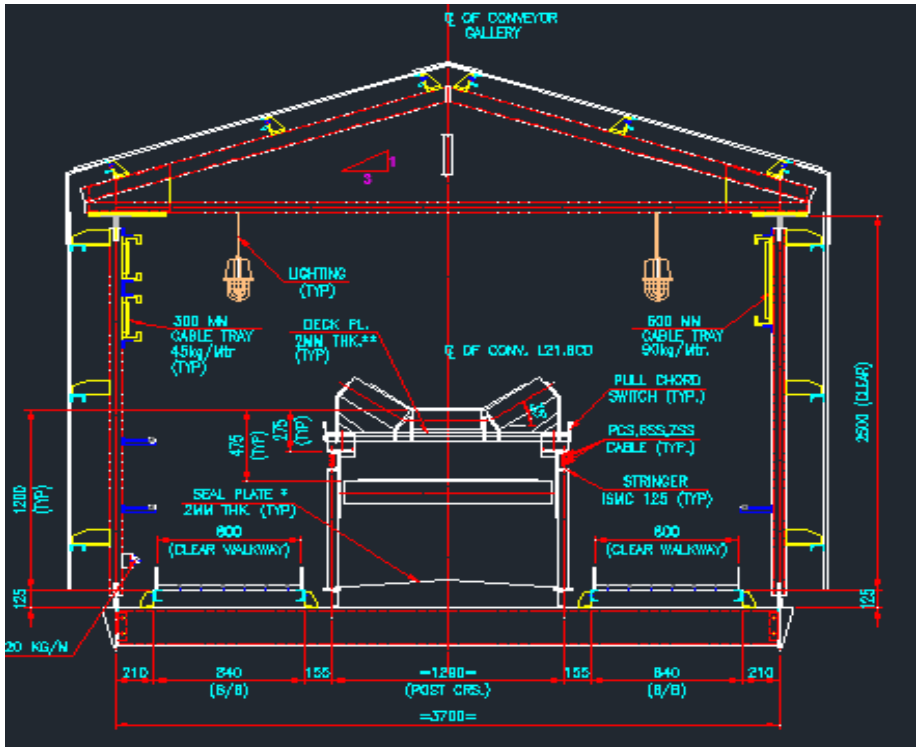
MATERIAL TRANSPORT SYSTEM

"Completely covered belt conveyors have been considered for material conveying from ship to respective storages"

Material Transport System

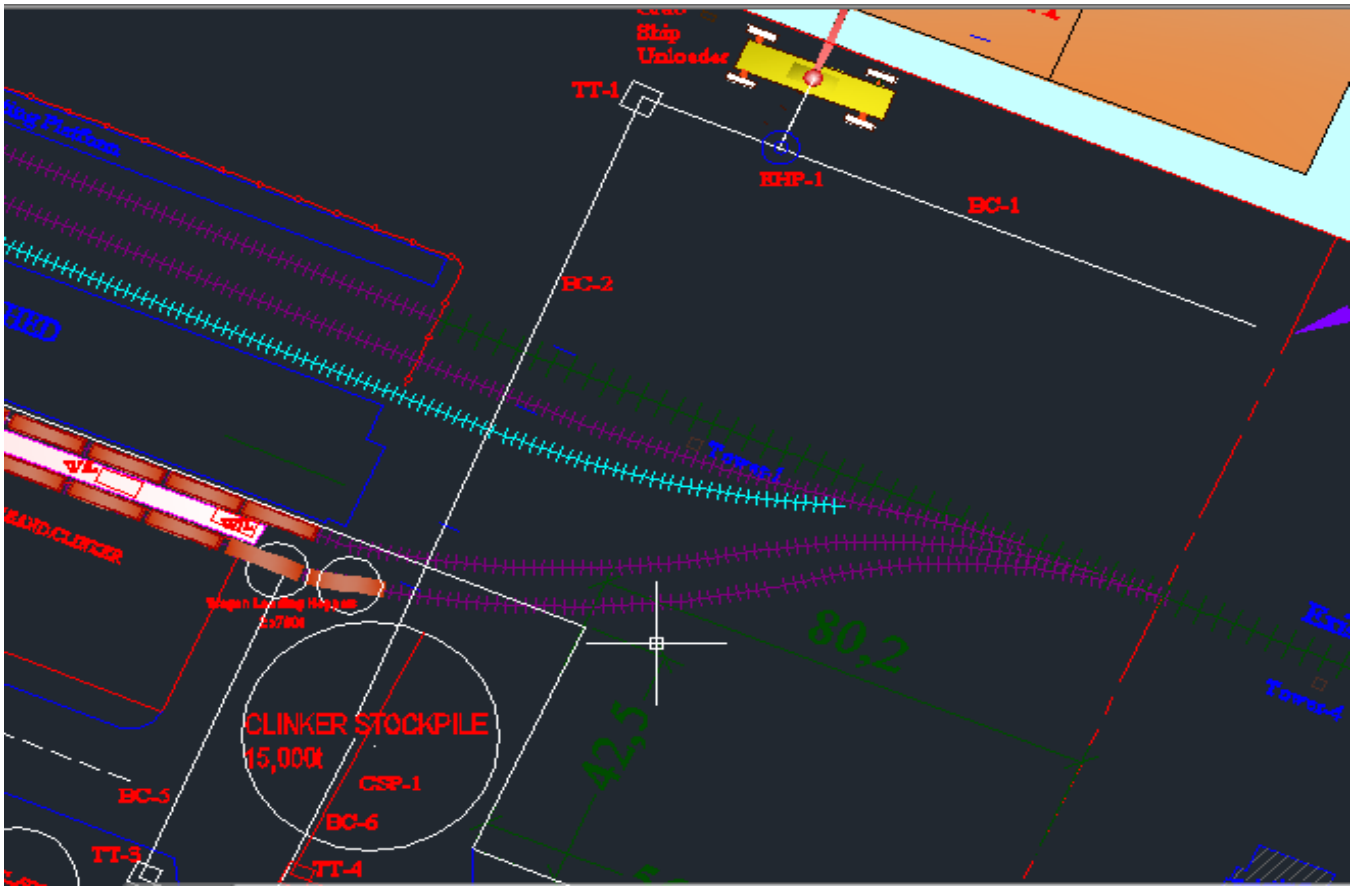
- Conveyors will be covered 3-sides (side and top) by GI sheet cladding and 1-side (Bottom) checkered plate.

- Belt conveyors have been considered rather pipe conveyor due to following reasons:



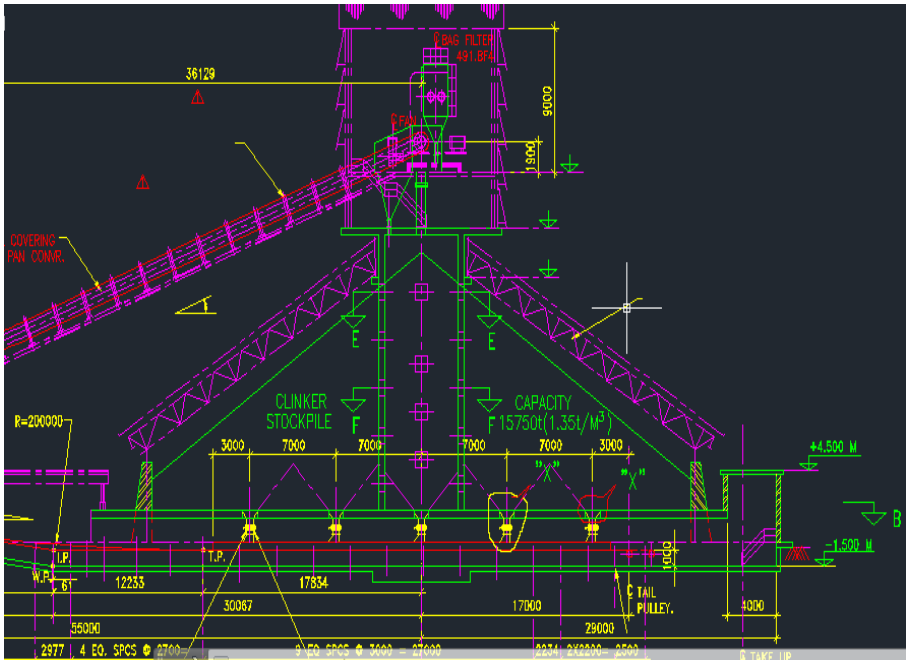
- ❖ BC is well proven technology required less maintenance as compared to pipe conveyor.
- ❖ Proposed project required short distance conveying with multiple discharges where pipe conveyor does not suit.
- ❖ Ship unloader may discharge the material on open conveyor only hence pipe conveyor is not suitable.
- Belt conveyors will be low speed conveyor to avoid dust generation during material conveying.
- Belt conveyor will be sized according to coal density and drive shall be selected on the basis of clinker density

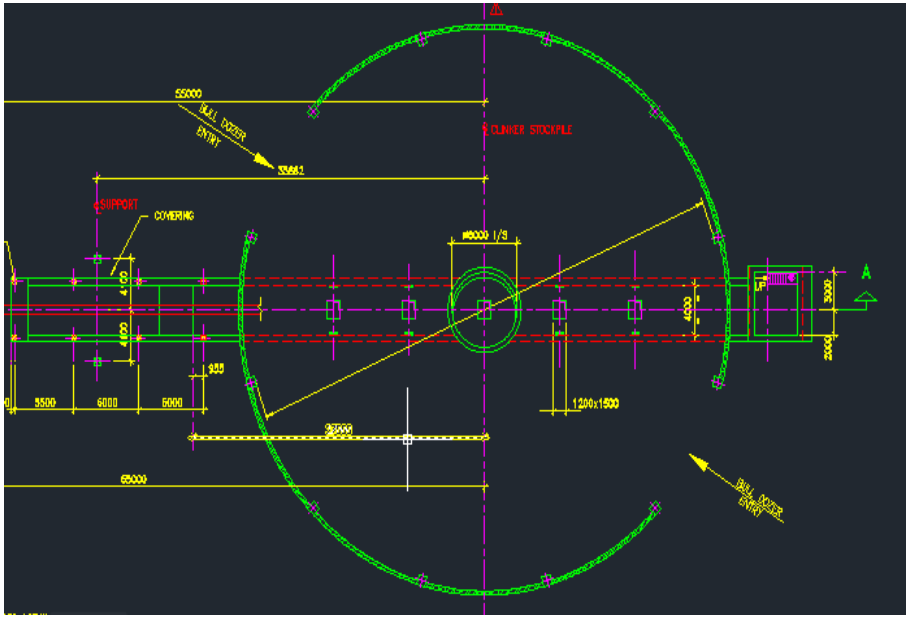
CLINKER RECEIVING AND STORAGE



"A Covered stockpile of capacity 15,000 MT is considered for clinker storage"

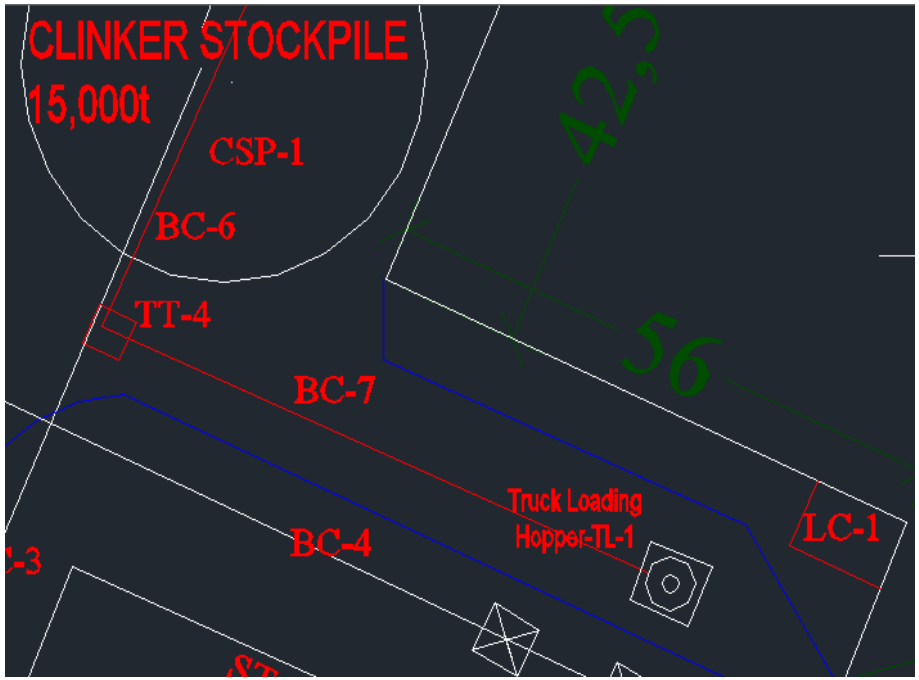
CLINKER RECEIVING AND STORAGE

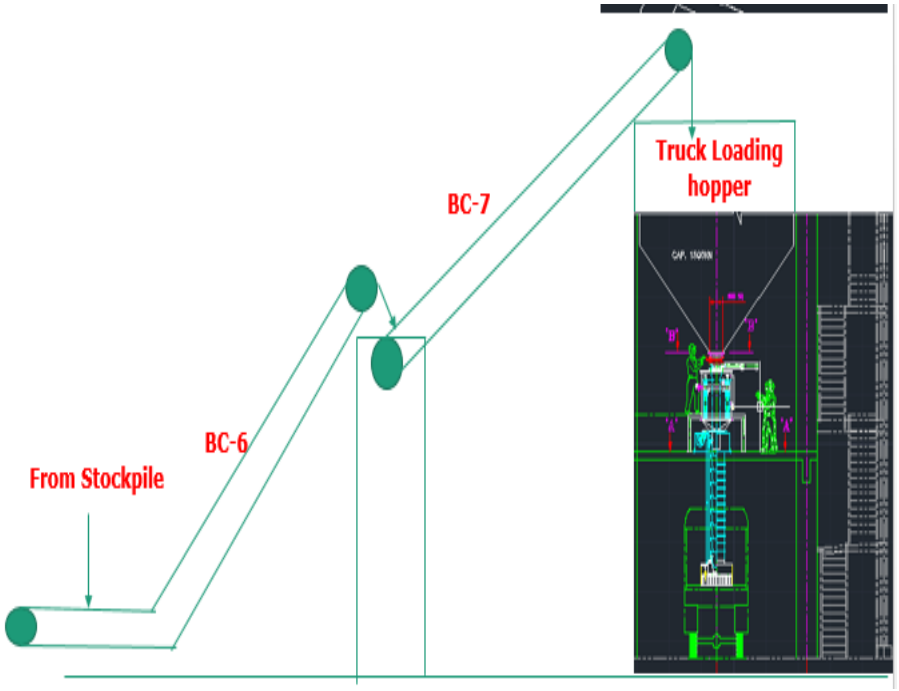




- A Covered stockpile of capacity 15,000 MT is considered for clinker storage, however additional (in absence of other material) 20,000 MT to 30,000 MT clinker may be stored by utilizing the newly proposed (20,000m^3) and existing shed (~10,000MT).
- Belt conveyor from ship unloader shall discharge the clinker either to clinker stockpile (15000 MT) or to the new proposed shed (20,000m^3). Suitable diversion arrangement shall be provided.

CLINKER DISPATCH-TRUCK LOADING



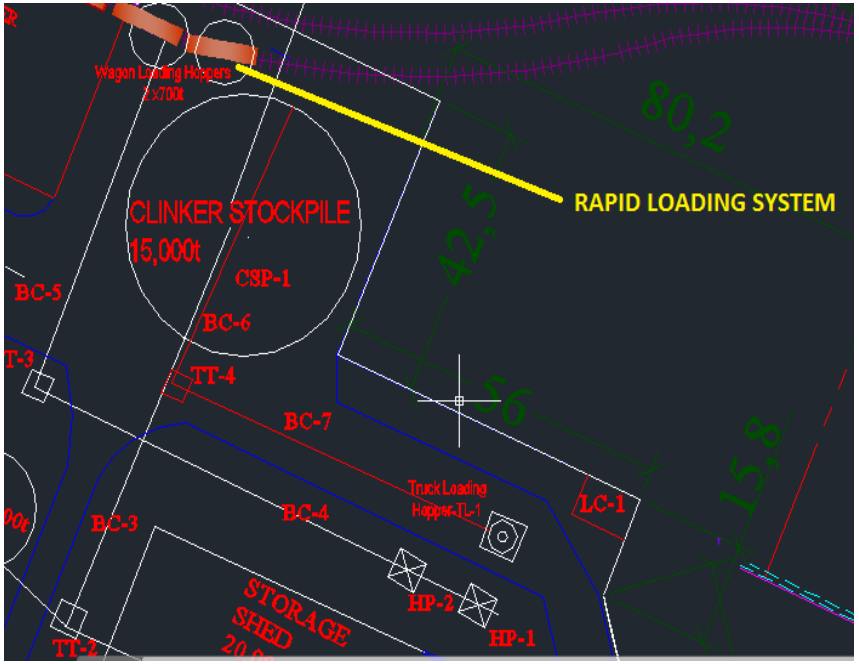


- 1 no. RCC tunnels shall be constructed for clinker extraction from stockpile, belt conveyors will be installed inside the tunnel and set of conveyor will be used to transport and feed the material to truck loading hopper

- Dustless type truck loading chutes shall be used for truck loading.

- With the truck loading set up, MCL will be able to dispatch clinker for their grinding unit at Cherthala.

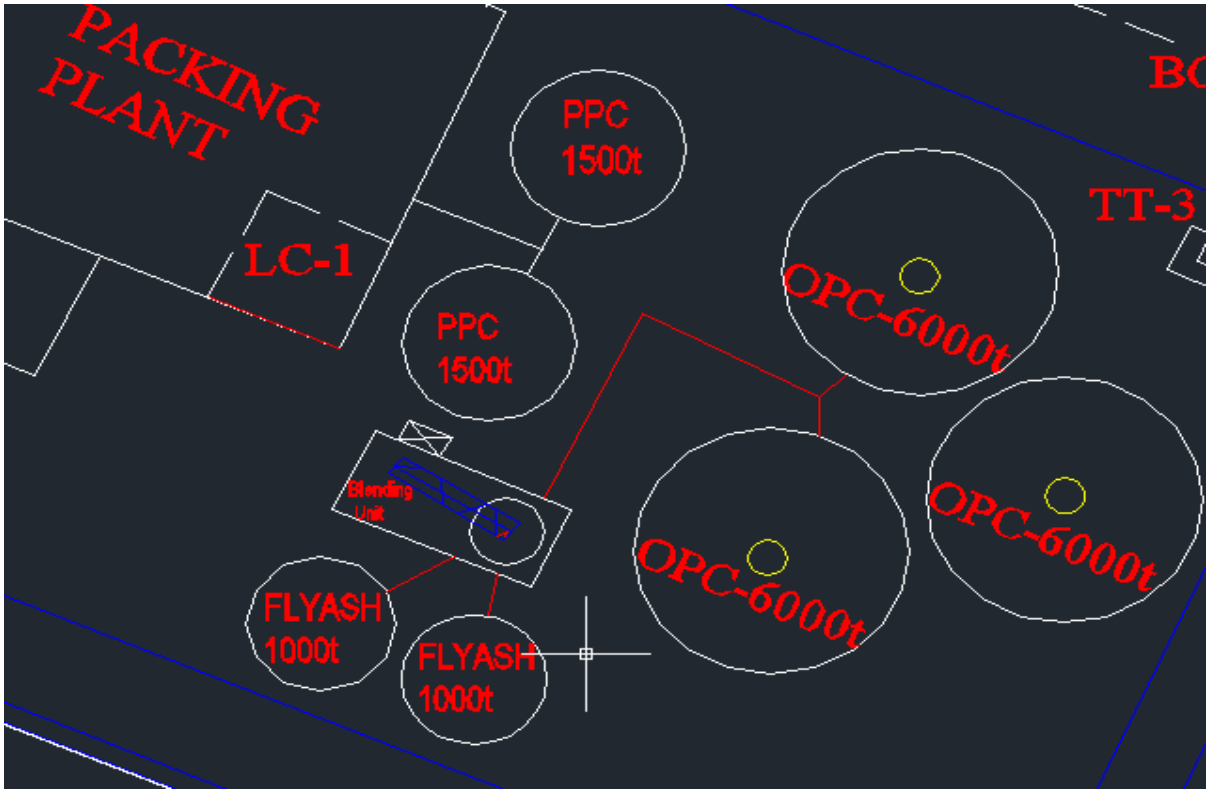
CLINKER DISPATCH-WAGON LOADING



- Clinker dispatch by wagons are proposed by rapid loading system (RLS) where 2 x 700 m^3 steel hopers will be constructed above the proposed railway track (After extension of existing track) which will be able to load 40-42 wagons in one hrs time.

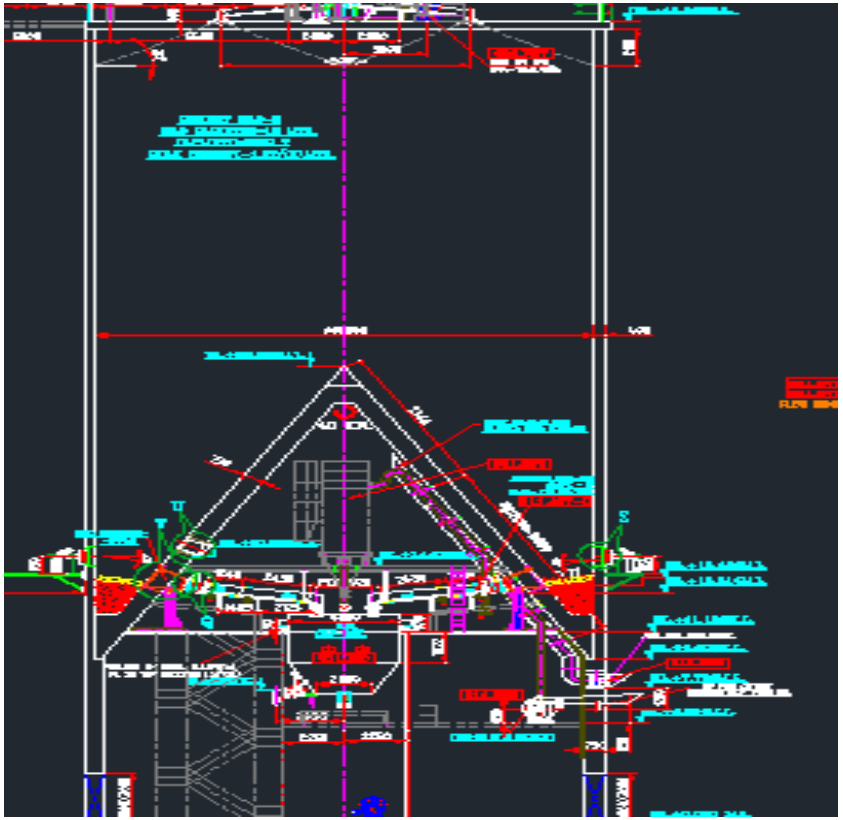
- In rapid loading of material, material is loaded on rake, while the railway rake is in motion. Below the main hopper, another small hopper is provided on load cells, which can accommodate about 1 wagon load of material.

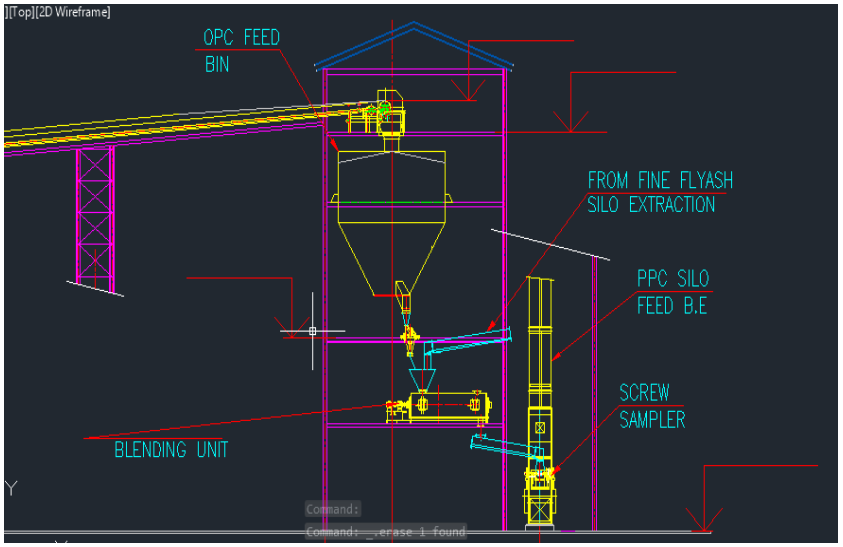
CEMENT RECEIVING AND STORAGE



"Cement will be stored in 3 nos. silos of 6000t capacity each in RCC construction"

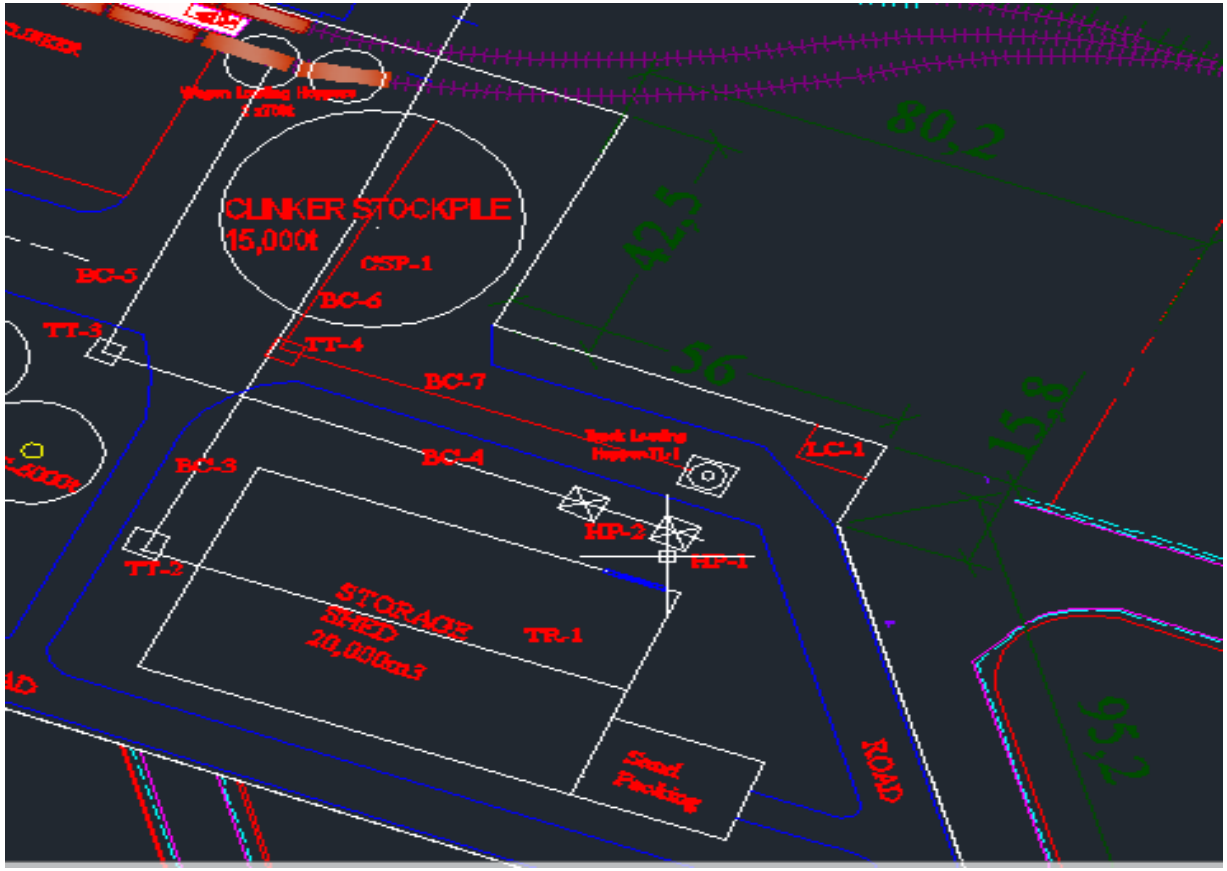
OPC Receiving, Storage and Blending





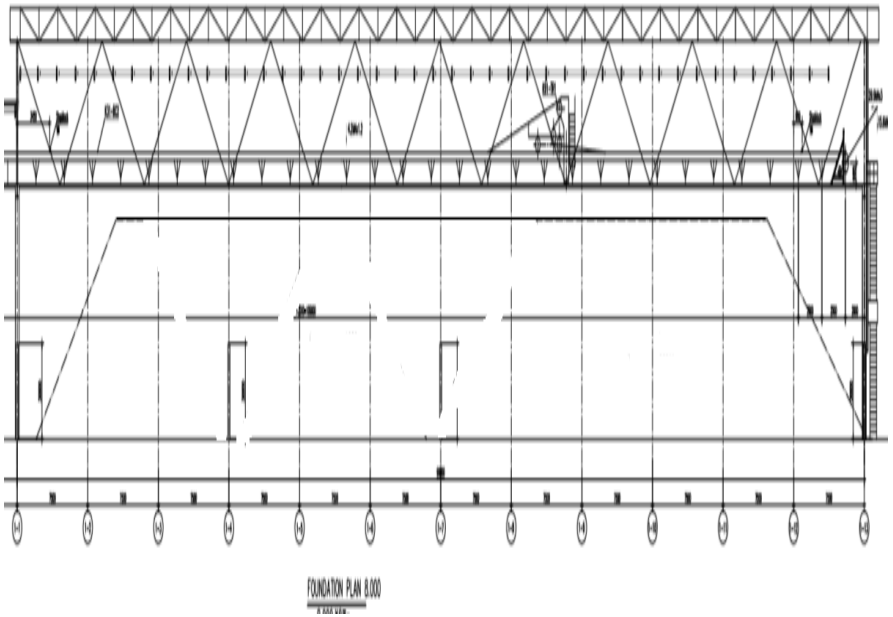
- OPC cement shall be unloaded from ship by use of ship mounted pneumatic unloading system
- Cement will be stored in 3 nos. silos of 6000t capacity each RCC silo.
- Silos will be inverted cone type with proper aeration system.
- Preliminary silos dimensions worked out as 20 m dia X 28 m height and OPC density 1.2 t/m3
- A blending unit of 240 tph capacity shall be installed to produce PPC

COAL, LIME STONE AND SAND RECEIVING AND STORAGE



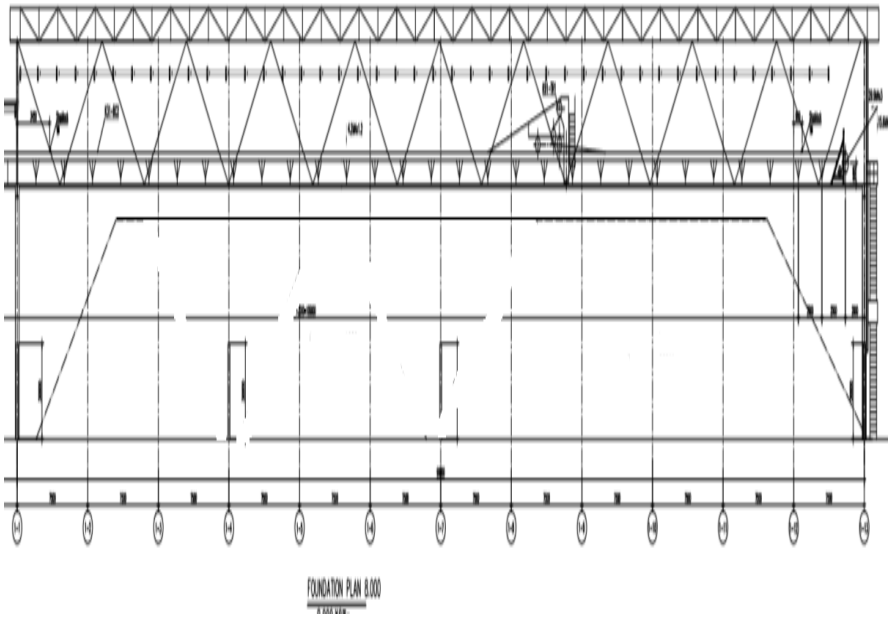
"A 20,000m^3 shed will be common for all allied material storage as per the requirement and logistic planning"

Material Receiving-Coal, Sand, Lime Stone



- Tipper Conveyors are considered for stock pile formation
- Sufficient height of shed shall be maintained to achieve the storage capacity
- Sand shall be further transported to sand packing machine
- A common storage is considered for sand, coal and lime stone due to space constraint with the assumption that only one material shall be received at a time

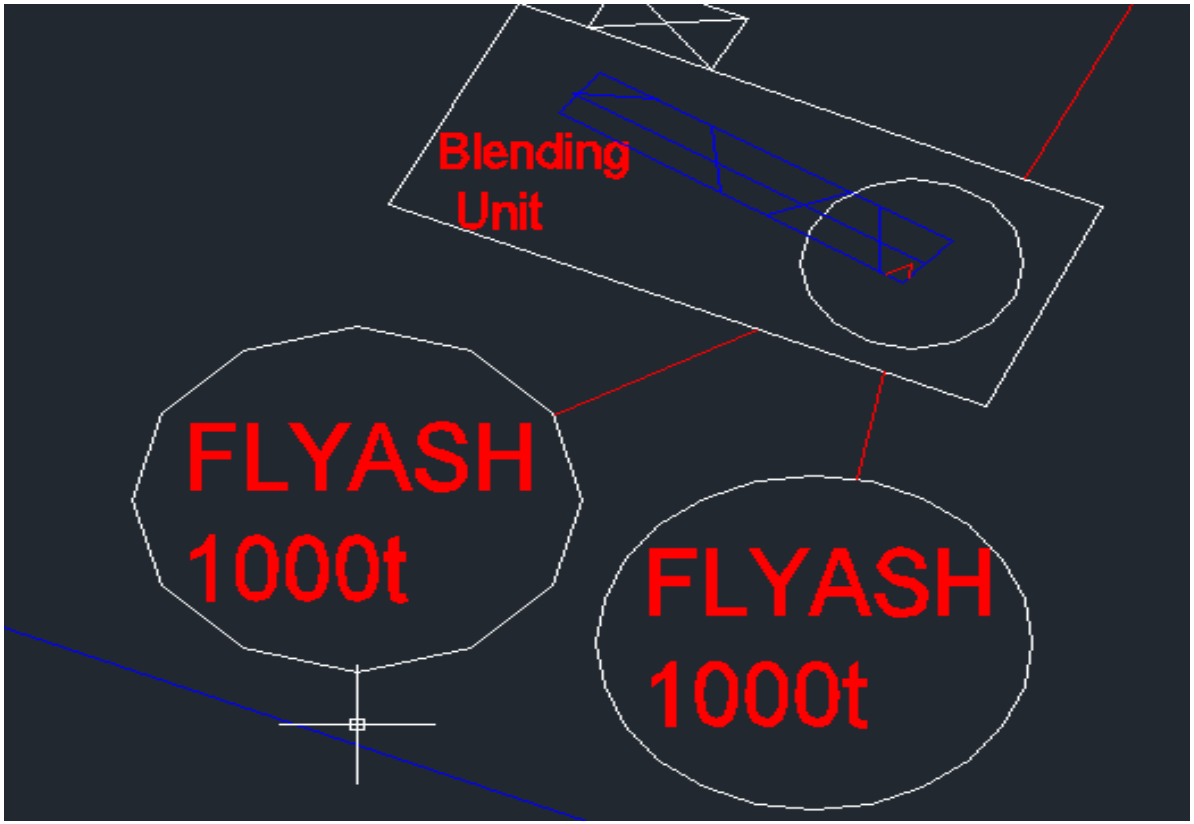
Material Receiving-Coal, Sand, Lime Stone



- Pay loader shall extract the Coal/Lime Stone from stockpile and feed to the dump hopper for further transportation upto wagon loading rapid loading system (RLS will be common for coal/limestone and Clinker as per the requirement).

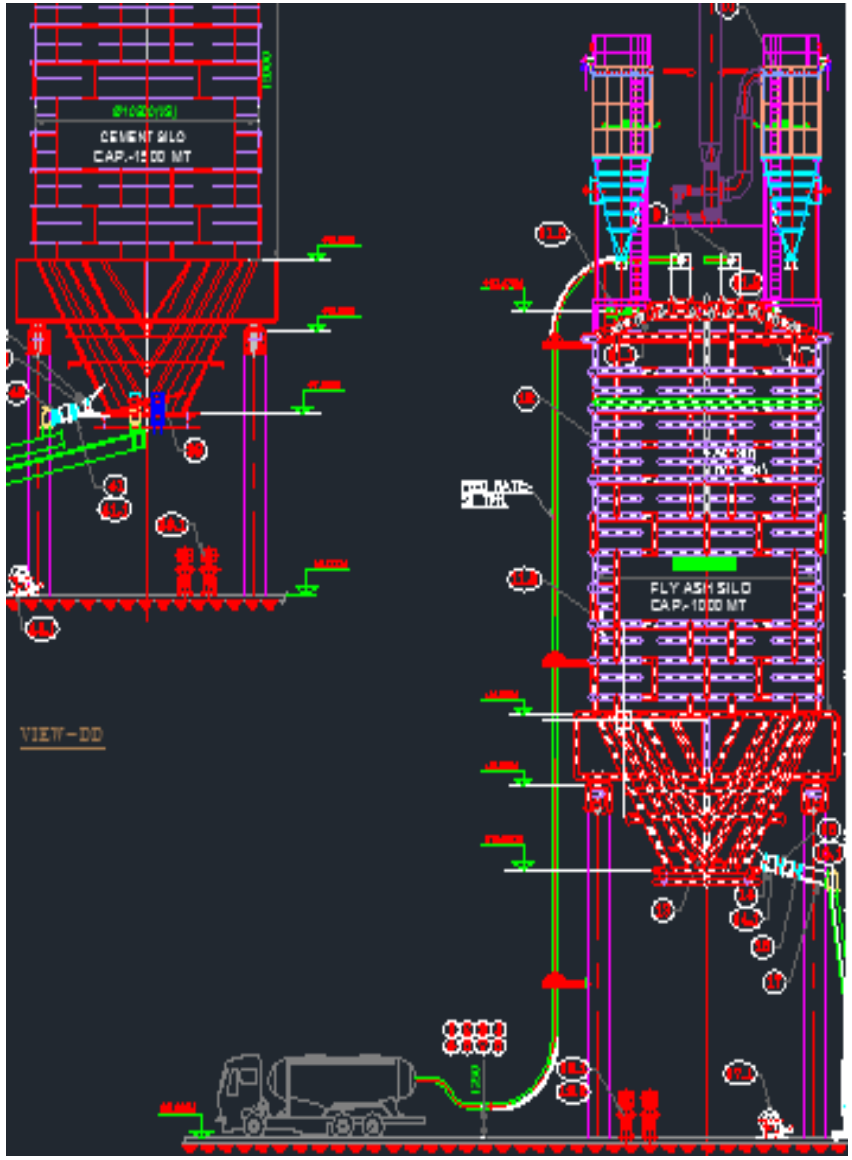
- Sand shall be further transported to the hopper of sand packing machine through Pay loader, dump hopper and bucket elevator / conveyor.

FLYASH RECEIVING AND STORAGE



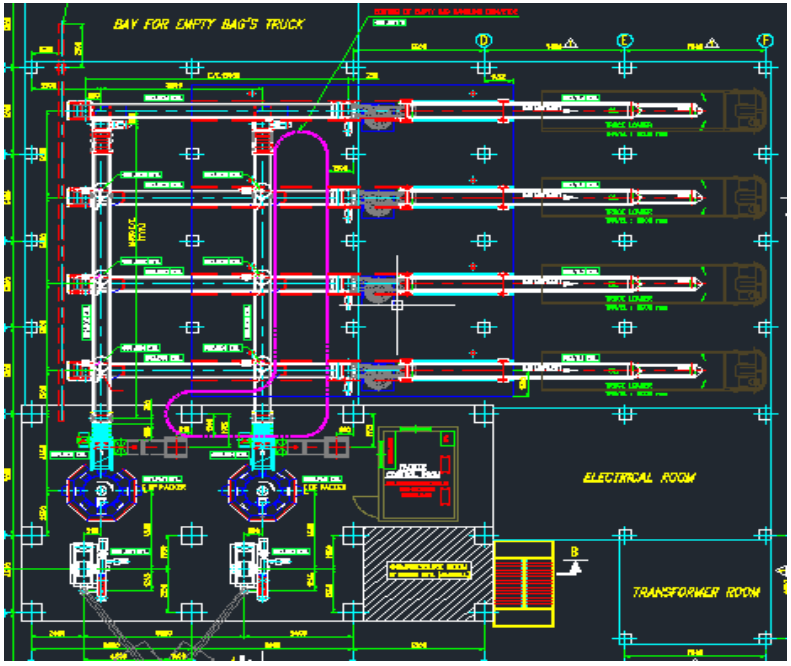
"Flyash silo shall be in steel construction capacity 2 X 1000 t with proper aeration & ventilation system"

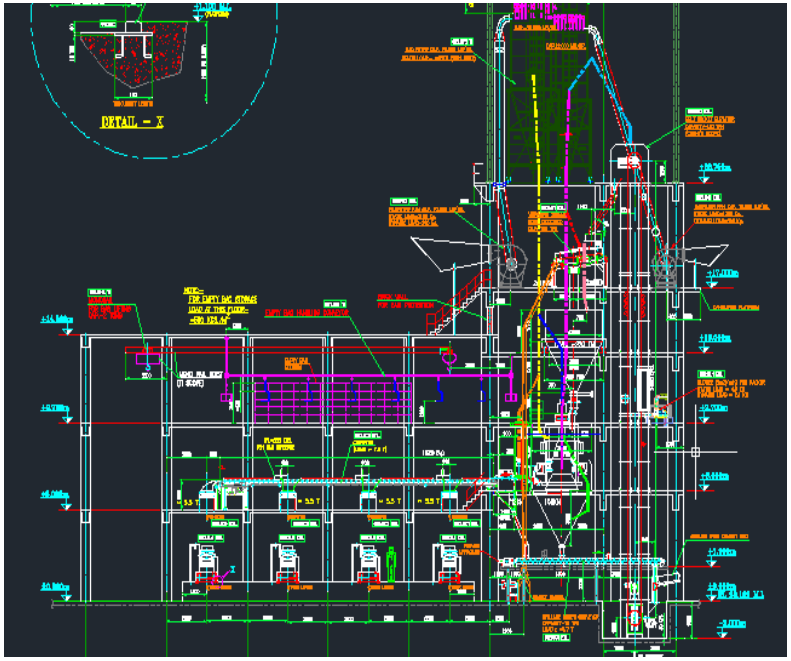
FLYASH RECEIVING AND STORAGE



- It is assumed that Flyash shall be received in dry condition by closed tanker and will be unloaded pneumatically to respective silo.
- 1W+1S X 30 m^3/min compressors have been considered for tanker unloading Flyash silo shall be in steel construction with proper aeration & ventilation system.
- It is assumed that Flyash received shall be good for direct blending with OPC to produce PPC

CEMENT PACKING AND TRUCK LOADING





- 2 nos. electronic rotary packer of 120 tph capacity with 8 spouts has been considered for better operation flexibility, 2 nos. semi-automatic truck loaders will be installed along with packer.
- The packing capacity for the unit is designed considering 100 % cement dispatch in bags
- Provision for 2 nos. semiautomatic packer has been kept in proposed packing plant building for future.

MATERIAL BALANCE

Material Description	Ship Capacity Expected (MT)	Proposed Storage Facilities
Clinker	40,000	Clinker Stockpile (15,000t) + Existing & new Shed (25,000t)
OPC	20,000	Cement Silos (3X6000) + (~2000t in PPC Silos)+Packed Bag Storage
Coal	40,000	New Storage Shed (16,000t) + Existing Shed (4000 to 5000t) and open yard
Sand/Limestone	40,000	New Storage Shed (25,000t) + Existing Shed (10,000t) and open yard

Existing shed shall be used for store various material as per requirement with effective logistic planning

COST OF PROJECT

S. No.	Items	Cost (Rs in Lakhs)
1	Land & Site Development	5680.62
2	Civil Infrastructures mainly silos and stock piles	7280.00
3	Equipment and Machinery	1846.60
4	Misc. Fixed Assets	10.00
5	Technical Know-how Fees	50.00
6	Expenses on Foreign Technicians & Training Abroad	0.00
7	Preliminary & Pre-operative Expenses	697.05
8	Provision for contingencies	456.83
9	Margin Money for Working Capital	0.00
	Total Project Cost	**16021.1**
	Say	**Rs 160 Crores**

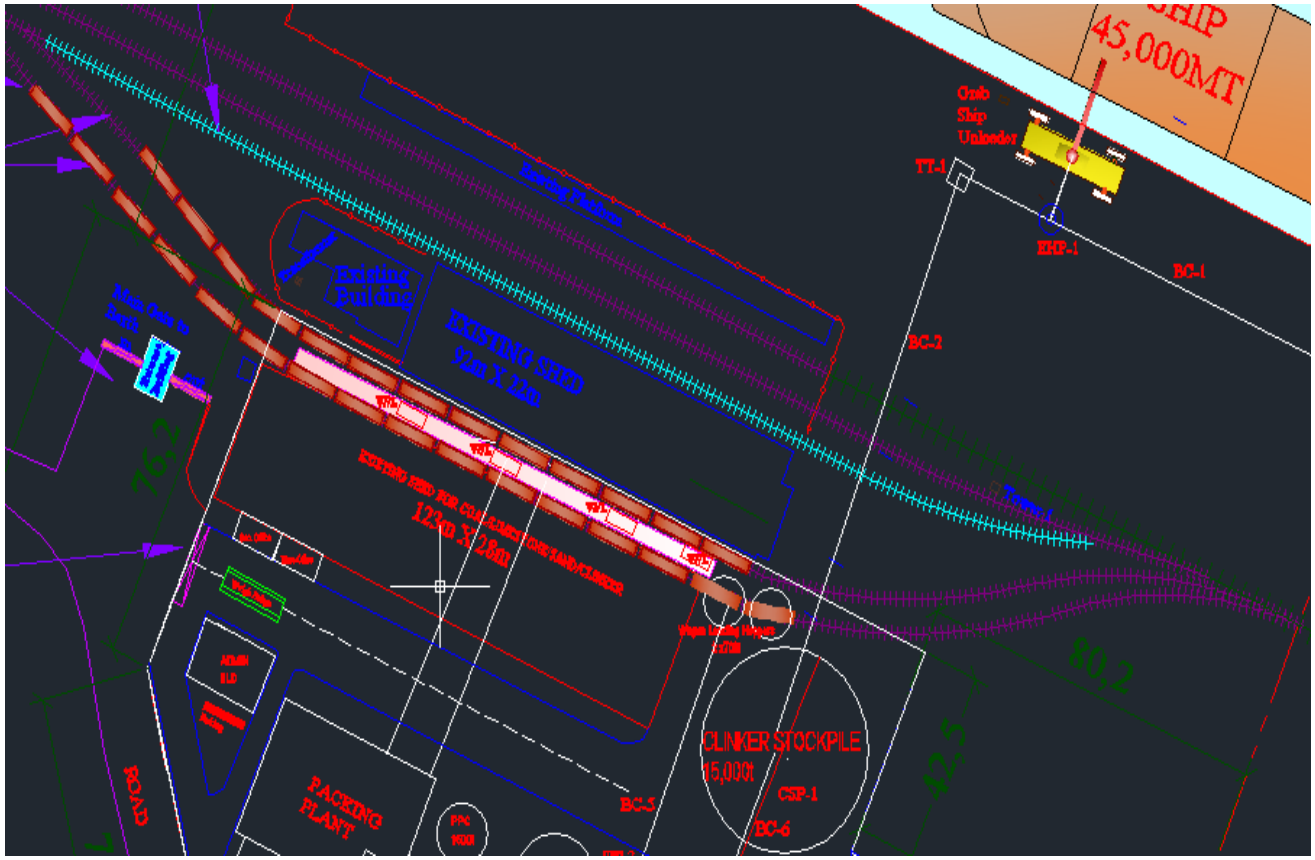
Means of Finance	
	Rs. in Lakhs
KVAT Loan during next two years	7200.00
Bridge Loan from Banks	6250.00
Internal Cash Accruals During 14-15	2300.00
Internal Cash Accruals 15-16	5000.00

Bridge Loan of 62.5 crores availing initially shall be brought down to 15 Crores by utilizing internal cash accruals.

SUMMARY OF FINANCIAL INDICATORS

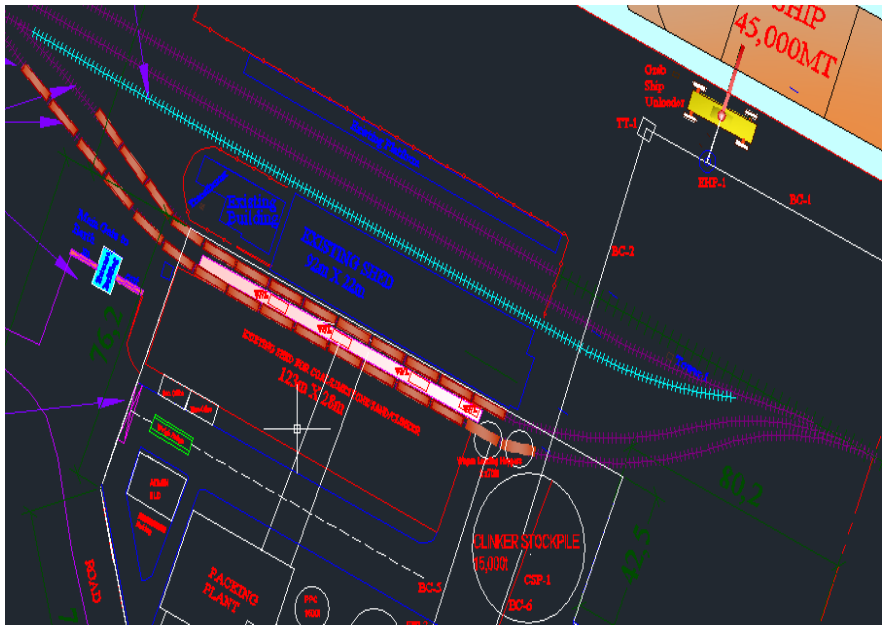
1.	Total Capacity	1.32 MTPA Cement & Allied Materials (0.6 MTPA Cement + 0.72 MTPA Allied Materials)
2.	Project Cost	Rs 160.00 Crores
3.	Break Even Point	29.81
4.	Pay Back Period	4 years 3 months
5.	Internal Rate of Return (IRR)	21.81%
6.	Net Present Value (NPV) @15%	4136.82 lakhs
7.	Debt-Service Coverage Ratio (DSCR)	4.07
8.	Net Sales Realization	5632 @ Rs. 281.6 per bag of PPC
9.	Estimated cost of production	Rs 4948/ tonne
10.	Annual Lease Rent	Rs 7.75 lakhs/acre + escalated at 2% per annum

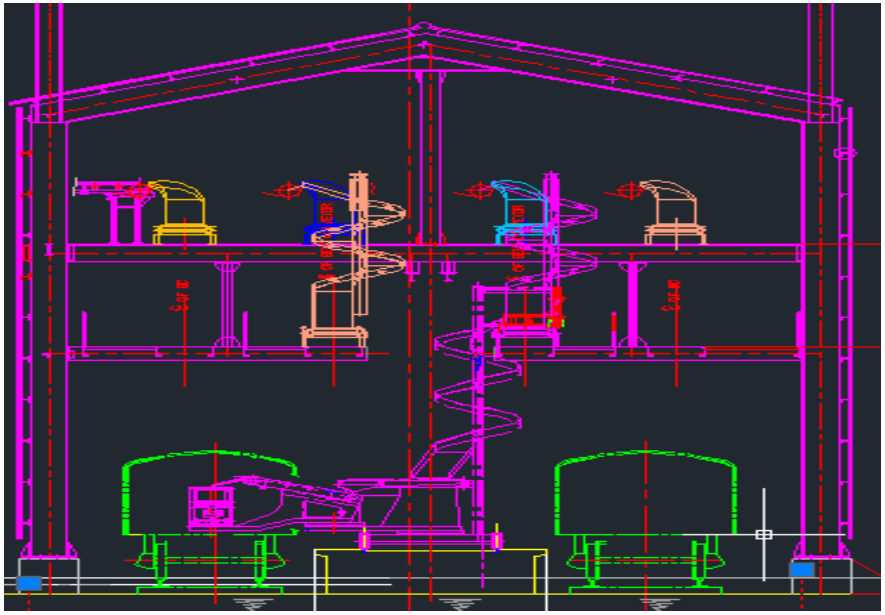
RAILWAY SIDING EXTENSION – FUTURE PLAN



"Two branches from existing track shall be extended and will be taken inside the proposed MCL plant area"

RAILWAY SIDING EXTENSION – CONTD..





- Two branches from existing track shall be extended and will be taken inside the proposed MCL plant area.
- Wagon loading platform shall be constructed between two proposed tracks for packed bags loading in the wagons.
- 4 nos. Wagon loading machines are considered for the project
- Wagon loading machine will be capable to load both side of loading platform