

Annex I – part 1

CAPITAL EXPENDITURE APPROVAL REQUEST FOR EXTRA EXPENDITURE

Business Unit : JOJOBERA CEMENT - LAFARGE INDIA LIMITED

Date of Submission : 15/05/00

Investment Code : F40
Project Manager : R GAUTAM

Project Description : PPC PROJECT AT JOJOBERA CEMENT PLANT.

Project Location : JOJOBERA CEMENT PLANT Estimated life 15 YEARS.

Project Scheduling Starting Date [dd/mm/yy] MAY-00 Ending Date SEP-00 [dd/mm/yy]
Duration COMPLETED.-ON FULL CAPACITY RUN.

Investment Type

A. Development Capex	<input checked="" type="checkbox"/> A1	Internal Development
	A2	External Development
B. Sustaining Capex	<input checked="" type="checkbox"/> B1	Replacement
	B2	Productivity and Quality Improvement & CDM
	B3	Environment and Safety
	B4	Management Information system
	B5	Land for Mineral Reserves

Investment Cost in RS. [million] : 35.825 Amount Budgeted 28 in RS. [million]
31 (APPROVED) + 4.825 (UNAPPROVED) Amount Budgeted
in USD [million] Amount Budgeted in USD [million]

Forex Rated considered RS./USD

Budgeted Year 2000 Tranche 1 2
 Unbudgeted RS.Million 4.825 2000

Economic Justification NPV of EVA in RS. [million]

Comments CTI approval required and obtained , Approval No..... Date.....
 CTI approval not required.
 ITEM NO 1C OF APPROVAL LIST-2000, UNDER SUSTAINING CAPEX

APPROVAL FOR EXTRA EXPENDITURE OF RS.4.825 MILLION MAY BE ACCORDED
ALSO

APPROVALS

[Name & Signature]

Originated by R GAUTAM	Signature		Date	28/12	Signature		Date	
Recommended by AS MALL	Signature		Date		Signature		Date	
Approved by K V GANESAN	Signature		Date	8/1	Signature		Date	
Approved by R IYER	Signature		Date		Signature		Date	
Approved by T F	Signature		Date		Signature		Date	

For additional sanction justification note (ANNEX NO1) is attached here with.

COO 3/11

CFO

CEO

RS/TR

This may be approved. The reasons for the overrun is explained.
The reasons for the lessons learnt

Project CO₂

Mission Statement

Recognising the importance of global warming issue and in line with Lafarge Group's strategy, Lafarge India would enhance its future survivability, competitive advantage, profitability and sustained development capabilities with responsible, voluntary and proactive actions to mitigate Green House Gases, with the help of a corporate carbon management programme.

Instead of trying to forecast and wait for the future, we will imagine and try to shape a carbon-constrained world.

Strategic Context

- Cement Industry is a significant contributor to man-made emissions of CO₂ (5% of total world-wide emissions), the principal gas responsible for climate change.
 - Lafarge Group wants to play a part in curbing the global warming phenomena on voluntary basis to avoid an ecotax or harsh regulatory approaches.
 - These actions will help meet goals under Kyoto Protocol, add value by lowering the energy bill, contribute to sustained development and build competitive advantage through future planning for the Group.
 - Hence, Lafarge Group has set itself a target of reducing its CO₂ emissions per tonne of cement produced by 20% globally over 1990-2010.
 - LIL's CO₂ Project will strive to build competitive advantage through : (a) maximum contribution to Group's commitment on CO₂ reduction, (b) keep the cost of CO₂ reduction low by using the various mitigation techniques under Kyoto Protocol like Clean Development Mechanism and Emissions Trading, (c) build and update knowledge base on the subject, (d) help the Group and the society in meeting sustainable development objectives.
- Accordingly, all future CO₂ reduction initiatives for LIL plants would be treated as CDM projects, with the 1st project for manufacture of PPC at Jojobera to be taken up on the same basis.

Objectives

- ✓ Achieve at least **25%** reduction in CO₂ /t of cement 1990-2010 by working on the three levers of (a) Increased usage of Cementitious materials, (b) Alternate fuels and raw materials, (c) Reduced thermal energy consumption.
- ✓ Gain a competitive advantage over our competitors: Keep our cost of CO₂ mitigation lowest in India.
- ✓ Generate maximum credits as a part of Clean Development Mechanism/Emissions Trading – launch registration of atleast one project under CDM/ET by end 2000.
- ✓ Align our CO₂ strategy with Lafarge Group – Develop a strategy paper and get it approved by Lafarge Group and LIL Board at the next board meeting.

- ✓ Work proactively to help shape Government policies, product standards and marketing/manufacturing practices that enable CO₂ reduction strategies.
- ✓ Reinforce our image as a responsible and sustained development-oriented firm – Communicate internally and bring a brochure on CO₂ for circulation.
- ✓ Build and keep updating the knowledge on the subject – Set up a Knowledge Base.

Goals, Action Plans and Timeframes for each objective

To be discussed and finalised at the Task Force meetings, as required, and approved by the Steering Committee.

Performance Measurement

- ✓ CO₂ /t of cement produced.
- ✓ No. of Projects registered under CDM (To be verified with Lafarge Group).
- ✓ Strategy Paper accepted by Lafarge Group and LIL Board.
- ✓ Developments in the field not known to the Task Force.

Resources and Budgets

- Time requirement (estimated): 2 days per month for each Task Force member
- Consultants cost and other cost – to be discussed.
- Administrative Costs of each project to be submitted for CDM – On project basis.

Organisation, Meetings and Reporting

- Steering Committee: CEO and Executive Committee Members (EXCOM).
- Task Force: Samir Cairae (Project Leader), Ch. Venkateshwarlu, PN Singha, Gopi Ranganthan, AS Mall, MK Mishra.
- ATC Interface: Luis Cascardo; DPC Interface: Georges Chahine
- Meetings of the Task Force – Every Month; Meetings of the Steering Committee – Every Quarter at the time of MCM.
- Project Leader shall convene the meetings, set agenda and duration, circulate minutes and be the primary facilitator. Active secondary facilitation expected of each member.
- Reports – A monthly report shall be sent the Steering Committee by the Task Force Leader covering the progress on objectives, status of action plans, new developments, issues to be resolved, etc.

EXPANSION / MODERNISATION

Annexure - I
(Revised)

Name and Address of the Unit : JOJOBERA CEMENT PLANT
Name and Address of the Owner : LAFARGE INDIA PVT. LTD., MUMBAI

A. Expansion

S. No.	Project Title	Actual Cost Rs. Lacs	Building Rs. Lacs	Plant & Machinery Rs. Lacs	Pollution Control Equipment Rs. Lacs	Mill Cost Shifted from Arasmeta Rs. Lacs	Tools Rs. Lacs	Others Rs. Lacs	Total Rs. Lacs	Remarks
1	Phase - 1 PPC I Expansion by 5lac tons per annum by producing Hydraulic Cement (Portland Pozzolana).	369.08	7.91	360.15	0.00	0.00	0.00	1.02	369.08	Commercial Production from 31 st December, 2000
2	Phase - 2 PPC II Expansion by 10.7 lac ton per annum of Hydraulic Cement (Portland Pozzolana)	6201.85		4267.19	128.64	1660.84	1.90	143.28	6201.85	Commercial Production from 1 st February, 2002
	Total For Expansion	6570.93	7.91	4627.34	128.64	1660.84	1.90	144.30	6570.93	

B. MODERNISATION

S. No.	Description	Actual Cost Rs. Lacs	Building Rs. Lacs	Plant & Machinery Rs. Lacs	Pollution Control Equipment Rs. Lacs	Mill Cost Shifted from Arasmeta Rs. Lacs	Tools Rs. Lacs	Others Rs. Lacs	Total Rs. Lacs	Remarks
1	State of art welding machine to improve roll press roll life.	10.69	0.00	10.69	0.00	0.00	0.00	0.00	10.69	Completion 20 th Feb, 2001
2	UPS System for process control.	15.42	0.00	15.42	0.00	0.00	0.00	0.00	15.42	Completion 31 st Mar, 2001.
3	Additional belt conveyors to reduce wagon loading time.	124.44	0.00	124.44	0.00	0.00	0.00	0.00	124.44	Completion 31 st May, 2001.
4	Bucket Elevator to replace air lift to reduce power cons.	98.86	0.00	98.86	0.00	0.00	0.00	0.00	98.86	Completion 30 th Nov. 2001
5	Speed Control for roller press to reduce power consumption.	11.58	0.00	11.58	0.00	0.00	0.00	0.00	11.58	Completion 30 th Sep, 2001
6	Close Circuiting of existing Ball Mill to reduce power consumption.	503.00	0.00	503.00	0.00	0.00	0.00	0.00	503.00	Completion 20 th Aug, 2002
7	Power Factor improvement to reduce power.	4.82	0.00	4.82	0.00	0.00	0.00	0.00	4.82	Completion 15 th Dec, 2002
8	Automation of Plant Lighting to reduce power consumption.	7.48	0.00	7.48	0.00	0.00	0.00	0.00	7.48	Completion 15 th Dec, 2001
9	RCC road to improve Environment.	17.18	17.18	0.00	0.00	0.00	0.00	0.00	17.18	Completion 31 st July, 2002
10	RCC flooring to reduce fugitive dust.	8.61	0.00	8.61	0.00	0.00	0.00	0.00	8.61	Completion 15 th Dec, 2000
	Total Modernization	802.08	17.18	784.90	0.00	0.00	0.00	0.00	802.08	

GRAND TOTAL	Expansion + Modernization	Rs. 7373.01 Lacs
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Sd/- Ranji Gautam
SR. MANAGER (F P)
JOJOBERA CEMENT PLANT

f.cdm PPC-II

JOJOBERA CEMENT PLANT
CAPITAL EXPENDITURE APPROVAL REQUEST
CAPEX- YEAR-2001.

Business Unit	JOJOBERA CEMENT PLANT- LAFARGE INDIA LIMITED			Date of Submission :16/03/01 REVISED-9TH APRIL
Investment Code	JJR/040/01			
Project Manager	R K GUPTA			
Project Description	EXPANSION PROJECT PPC-II			
Project Location	JOJOBERA CEMENT PLANT	Estimated life	25 years	
Project Scheduling	Starting Date [dd/mm/yy] Duration	Seven Months from the date of Executive Approval		Ending Date [dd/mm/yy]
Investment Type	A. Development Capex	<input checked="" type="checkbox"/> A1 A2	Internal Development External Development	
	B. Sustaining Capex	B1	Replacement	
		B2	Productivity and Quality Improvement	
		B3	Environment and Safety	
		B4	Management Information system	
	B5	Land for Mineral Reserves		
Investment Cost	in RS. [million]	500	Amount Budgeted	474 in RS. [million] (Details as per Annexure I attached)
	in USD [million]		Amount Budgeted	in USD [million]
Forex Rated considered	RS./USD			
	Budgeted	Year	2001 Tranche	1 2
	Unbudgeted			
Economic Justification	NPV of EVA	in RS. [million]	988 (Details as per Annexure II attached)	
Comments	CTI approval required and obtained , Approval No..... Date..... CTI approval not required NO			

APPROVALS
[Name & Signature]

Originated by	R Gautam	Signature		Date	16/03/01	Signature		Date	
Reviewed by	RK Gupta	Signature		Date	16/03/01	Signature		Date	
Recommended by	AD Khatri	Signature		Date	9/4/01	Signature		Date	
Approved by	KV Ganesan	Signature		Date	15/4	Signature		Date	
Approved by	Ravi Iyer	Signature		Date	15/04	Signature		Date	
Approved by	T Farrell	Signature		Date	24/04	Signature		Date	

Chief Operating Officer
VP (Projects)

JJR/PROJ-APP/122/2001
Dated : 29th March,2001/9th April, 2001

LAFARGE INDIA LTD.
PROJECT REPORT

PROJECT TITLE : JOJOBERA EXPANSION PROJECT PPC-II
PROJECT / SCHEME NO. : JJR/040/01

PROJECT MANAGER : Mr. R.K. Gupta

OBJECTIVE / LINKAGE TO KEY PERFORMANCE INDICATOR:

- To enhance production capacity from existing 1.5 mtpa of PSC and 0.4 mtpa of PPC to 1.5 mtpa of PSC and 1.4 mtpa of PPC of Jojobera Cement Plant.
- To reduce CO₂ emission in line with the group objectives (to reduce CO₂ emission by 20% by 2010) & be eligible for CDM Project in future .
- To load a cement rake in five hours time so that upto four cement rakes can be loaded in a day or loading of two cement rakes simultaneously in 7-8 hrs time.
- Reduction in the distribution cost of cement in the Eastern Region at present market share of 26% (approx.).
- Improve consistency in supply of Cement to the customer.
- Improve quality of PPC and its consistency.

PROOF OF THE NEED :

- Jojobera Cement Plant is located in the city of Jamshedpur in Singhbhum district of Jharkhand State, India, Jamshedpur is an Industrial town where industries like integrated steel plant of TISCO, Automobile Manufacturing Industry of TELCO, Jojobera Power Plant of Tata Power Company, Cummins Engine Manufacturing of Tata Cummins, Bearings Manufacturing Industry of Timken Ltd. (manufacturing of Bearings) and several other industries like Cable Manufacturing, Tubes Manufacturing, Engineering Workshop etc. are situated.
- Jojobera Power Plant has installed capacity of 187.50 MW as of date and is further expanding by 120 MW which will be commissioned by March,2002.The fly ash generated at the Power Plant as of date is approximately 1200 tpd which will become 2000 tpd. On commissioning of the third unit of 120MW in March 2002. The Power Plant is adjacent to our Jojobera Cement Plant having same common boundary, and hence the fly ash generated at the Power Plant can be economically and efficiently used for the production of Portland Pozzolana Cement.
- The fly ash from the Power Plant as per the government notification will be given free of cost by the Power Plant. Further since the power plant is just adjacent to our Cement Plant, transportation cost for the fly ash is also almost nil. The cost of installation of the dense phase system within the power plant premises and power consumption for same to transport the fly ash from the Jojobera Power Plant to our plant will be borne by the Power Plant.
- By producing PPC at Jojobera we will save considerable clinker thereby saving considerable CO₂ emission at SCP & ACP also we will save considerable amount of natural resources in terms of limestone & fossil fuel.
- By enhancing the Production Capacity of the Jojobera Cement Plant from existing 1.9 million ton per annum to 2.9 million ton per annum, consistency in feeding to Eastern Market will improve and delivered cost will reduce by approximately Rs.380/- per ton. Details are as per Annexure – I attached.
- Contribution to EVA is positive and Net Present Value of same will be 988 million INR.
- Scenario of the Total capacity of Lafarge India Ltd. (Jojobera Cement Plant, Sonadih Cement Plant and Arasmeta Cement Plant) with zero inventory of Clinker is attached as per Annexure – III attached.

PRESENT & TARGET SITUATION

Parameter	Present Situation	Target Situation
PSC Capacity	1.5 million tpa	1.5 million tpa
PPC Capacity	0.4 million tpa	1.4 million tpa
Power Consumption (Overall PSC + PPC)	41kwh/ton	38.00kwh/ton

BRAINSTORMING AND SOLUTION TO ACHIEVE THE TARGET

To achieve the Target , following alternatives were evaluated :

1. Case I - Grinding in Vertical Roller Mill
2. Case II - Grinding in Roller Press followed by closed circuit Ball Mill.
3. Case III-Closed Circuit Ball Mill with or without the provision in the layout for installation of roller press before the mill in future.
4. Case IV-Closed Circuit Ball Mill of 140tph to be shifted from M/S Arasmeta Cement Plant.

The cost & power consumption analysis was done and same is tabulated herein below :

Case No.	Case Description	Capital Cost (Rs million INR)	Specific Power Consumption kwh/ton grinding
Case I	Vertical Roller Mill	720	22.5
Case II	Roller Press followed by closed circuit ball mill	689	22.5
Case 3	New Closed circuit ball mill with or without the provision in the layout for installation of roller press before the mill in future	578	28.5
Case 4	Closed circuit ball mill of 140tph from Arasmeta Cement Plant	474	28.5

Based on the above analysis and for the fact that feeding to the market from Jojobera Cement Plant , logistic cost will be less than the logistic cost for feeding to the market from Arasmeta Cement Plant , it was decided to go for Case 4 to meet the target.

DETAILS OF THE PROJECT

- Availability of Raw Materials
 - Clinker
Sonadih and Arasmeta Cement Plant will be able to feed Jojobera Clinker Requirement as per the Annexure III attached.
 - Gypsum
Mineral Gypsum is received from Rajasthan Availability of the annual gypsum requirement from Rajasthan is not a problem. Only care is to be taken to store adequate requirement of gypsum during three months of monsoon period (July, August & September) during which period the supply from Rajasthan is not available. Required quantity of Chemical Gypsum will be procured from Fertiliser unit of M/s Hinductan Lever Chemical at Haldia.
 - Flyash
Total requirement of flyash 0.49(0.14 + 0.35)mtpa for the total production of 1.4 mtpa of PPC at Jojobera Cement Plant will be met by the flyash generated by the Jojobera Power Plant (Tata Power Company), considering maxm permissible addition of 35%.
- Main Machinery Sizing
 - Sizing of new grinding facility :

- Production : 1.0 mtpa of PPC using flyash
- Operating days per annum : 330
- Operating Hours per day : 21
- Grinding capacity required : 144 tph
- To meet the additional grinding capacity and to commission this facility at the earliest, shifting of closed circuit ball mill of 140tph capacity from Arasmeta Cement Plant has been considered. The 140tph new PPC grinding facility will take care of the monthly increased production after monsoon period during which the demand dips and picks up after monsoon period necessitating increased despatches.

- Packing and Dispatch

- The existing Jojobera grinding unit has three electronic rotary packers of twin discharge. The capacity of each packer is 180tph making a total of 540tph. However, average achieved on consistent basis is 150tph per packer i.e. in total 450tph.
- The total cement production after expansion on daily basis will be 8787 tones on the basis of 330 days of operation per annum.
- Packing Capacity required will be 703tph based on 15hrs. operation /day with safety factor of 1.2 (8787x1.2/15).
- Considering the emphasis of cement dispatch from Jojobera by rail, it will require two additional twin discharge rotary packer of 180tph capacity. Based on this total achievable capacity from the five packers will be 750tph which will be able to load a cement rake of 40 wagons in four to five hrs. giving margin for door changing by wagon loader with additional wagon loading platform and four more wagon loading machines. Hence with this augmentation, upto four cement rakes dispatch shall be possible.

- Storage's

Material	Requirement Perday (tones)	Available storage Capacity (tones)	No.of Days Storage	Remarks
Clinker	4730	20,000 effective 15000tons only due to dead stock	3	As clinker will come from Arasmeta & Sonadih ,additional clinker silo of 20,000t has been considered.
Gypsum	315	10000	28	Storage capacity of 27000tons in total is required to care during monsoon season.Hence,additional gypsum storage yard with stacker /reclaimer has been considered.
Flyash	1400	2x 750	1	Additional storage of 1500t capacity has been considered.
Cement	8787	3x7000	2	In view of the two types of cement being produced a new Cement Silo of 7000t has been considered.

- Electrical and Instrumentation

- Power Source

Power to the plant is being supplied from TISCO through double circuit cable connection at 33KV. The power cable in one circuit will be strengthened by laying additional run of 3x240 sq mm cable. The power supply to the plant is quite stable. Power Demand of the existing plant is 16MVA which will be increased to 22MVA to meet the requirement of the expansion. Power to the expansion project is proposed from spare feeder of double bus bar board located at indoor substation. New load centre has been considered near the cement mill to cater to the load demand

- of Clinker/Gypsum handling, Cement Grinding, Packing and Dispatch. The motor control centres for packing and dispatch shall be located in the existing packing plant MCC room.
- Distribution Transformers 6.6 KV SwitchBoard
2 nos. 1.6MVA distribution transformers are being considered for LV distribution for the expansion plant. Single bus bar 6.6KV Switchboard at Cement Mill Load Centre has been considered. Switchgears shall be motor operated Vacuum or SF6 Circuit Breakers for incomer and cement mill drive. Vacuum contactors shall be provided for separator.
 - LT Distribution
LT switchboards comprising fully drawout motor operated, air circuit breakers with necessary protection considered. LT Busducts for connection of power between distribution transformers and LT Switchboards considered. Motor control Centres of sheet steel enclosure, compartmentalised for clinker/gypsum handling, cement grinding, packing and dispatch considered.
 - HT Motors
Induction motors for Cement Mill shall be 6.6KV slipring motors with Liquid Rotor Starters. Capacitors of suitable KVAR rating and voltage grade directly connected across stator switch terminals of respective 6.6KV motors.
 - Variable Speed Drives
AC squirrel cage motors along with variable frequency controllers for separator and separator fan.
 - LT Loads
Multi-step automatic controlled capacitor banks connected at LT switchboard.
 - Cable Laying
In view of the problems faced due to laying of cables in trenches and tunnel in the existing plant, cable shall be laid over head on cable galleries.
- Process Control
Dependable and rugged instrumentation network considered for operational safety, ease of maintenance and repairs, flexibility to adopt future development/modifications. For supervision and monitoring process parameters, the plant control system shall be augmented by adding process controllers type PLC-5/60 with RS View software from Allen Bradley. The process controller shall be located in the existing control room and I/O in the load centre and MCC rooms. Electronic weigh feeders for desired proportioning and feed rate shall be installed. For flyash feed control solid flow meter has been considered.

IMPLEMENTATION PERIOD

The implementation period will be seven months from the date of finalisation of order for Civil / Structural works and the executive sanction.

(Note : Earlier schedule was given to start Civil / Structural work from 18th March, 2001 in order to complete foundation work before monsoon. Delay in deciding Civil / Structural Work will delay the entire Project due to ensuing monsoon).

PROJECT COST

Total Project Cost budgeted is INR 474 million. Details are as per Annexure IV attached.

EVA: RS. 988 MILLION (EVA CALCULATIONS ATTACHED)

CONCLUSION

The Project has no financial risk due to proximity to the market.

(R.K. GUPTA)
Senior Manager (Projects)

LAFARGE**LAFARGE INDIA LTD**

JOJOBERA CEMENT PLANT

P.O. RAHARGORA, JAMSHEDPUR, BIHAR 831016

PH: (0657) 488485 FAX: (0657) 486702

Stocknumber 61509452

76/6/2000

SUPPLIER CODE : MJ072
 Malik Engineering Works
 04, Wazirpur Industrial Area
 Delhi
 PIN - 110052

PURCHASE ORDER

Direct Departmental Stores

ORDER NO: 12-JUN-2000
 DATE:

The above number must be quoted on all correspondence.
 Invoices, bills and marked on all packages.

Buy the following goods according to the terms, conditions and instructions specified hereon, overleaf and
 All goods should be consigned to Lafarge India Ltd, and not to self, and booked to
 Lafarge India Ltd, Jojobera, by Road, Freight prepaid, unless otherwise specified. A copy of packing list showing
 details must be included in the packing and in addition to what is specified under Clause 8 overleaf, an extra
 packing list quoting our Order should be posted direct to the Stores Department, Lafarge India Pvt Ltd,
 831016.

QUOTATION REF: MEW/2000/Q-1129 (LIL)
 DATE: dt. 13/5/00

Our Ref.	Stock Number	DESCRIPTION	QUANTITY	RATE
(1)		Rupees Forty Four Thousand Nine Hundred Ten and Zero paise only Lab Ball Mill Model: MEC - 263-A; Make: MEW (Specification: As per your offer) Delivery Schedule :- 1.000 by 25-JUL-2000	1.000 nos	44710.00000 per nos
(2)		Rupees Thirty Three Thousa Seven Hundred Fifty and Zero paise only Lab Jaw Crusher Model:- MEC-391 Make: MEW (Specification: as per your offer) Delivery Schedule :- 1.000 by 25-JUL-2000	1.000 nos	33750.00000 per nos
<u>Extra Charges</u>				
Central Sales Tax (Concessional) D.F to be issued by Acc. on bill receipt				4.00
Delv Mode :- To be delivered by road Price Trm :- F.O.R. Jamshedpur Pay Terms :- 100.00 % Payment against doc. thro SBI, Telco, Jsr. Bank charges to respective a/c				
<u>Comments</u>				
Price will remain firm till completion of supply.				

Delivery Required

CC: Accounts

APP. VALUE
 CH. A/C
 SANCTION

For LAFARGE INDIA LTD

AUTHORIZED SIGNATORY

Annex I – part 2

Crusher	Consumption	66.5%	71.0%
Crusher Transport	From Asmara	2.0	
	Handling/packing of crusher	400.0	
	Excess Freight	412.0	
	Proportion consumed	100%	
	Total Transport Cost	274.0	
Opium	Consumption	3.5%	3.0%
	Rate	1,361.0	1,361.0
	Total	47.8	40.8
Fly Ash	Consumption	30.0%	26.0%
	Rate	220.6	220.6
	Total	80.0	80.0
Power	Consumption	33.0	32.2
	Rate	4.9	3.5
	Total	161.7	112.3
Fuel	Consumption	107.0	
	Rate	161.7	
	Total	172.7	
Bags	Consumption	20.1	20.1
	Rate	4.9	4.9
	Total	98.2	98.2
Packing contract	Total	12.2	12.8
Stores and Spares	Total	8.2	8.2
Winding Fees	Total	1.6	1.6
Total Variable Cost		603.5	334.0

Crusher Cost from Asmara	435.8	535.8
Variable Cost of crusher	958.8	714.4
Total Cost of crusher		

Crusher cost to West Bengal	377.0	758.0
Crusher cost to West Bengal	350.0	350.0
Crusher cost to West Bengal	1,888.8	1,822.4
Storage cost to overall Optimization (RAT)	25.0	
Net Delivered Cost	1,661.8	1,822.4

Net Delivered Cost: AT 30% Flyash 1,668.8
 AT 35% Flyash 1,819.4

Assumed that 50% chemical gypsum will be used at Jodhpur in India
 Assumed fly ash contained at 30%, without any increase in cost of investment
 Assumed no change in power cost. Any reduction in cost at Jodhpur will have positive gain.
 Preliminary figure to be examined.

Costs are to production and distribution optimization for entire company using LP model
 Preliminary figure to be examined.

ANNEXURE IV

LAFARGE INDIA LTD.
JOJOBERA EXPANSION PROJECT - PPC

Project Cost Estimate in Rs.Millions.

Sn	Description	Budgeted Cost INR	Actual Cost INR
1	Mechanical Equipments	127.90	
2	Mechanical Erection	15.00	
3	Electrical Equipments	49.50	
4	Electrical Erection	3.50	
5	Control & Instrumentation	10.00	
6	Erection of Control & Instrumentation	2.00	
7	Civil Works	201.60	
8	Railway Siding Expansion	17.00	
9	Principal Consultant Cost (Fees, travelling, boarding & lodging, per diem charges for inspection/supervision etc.)	2.50	
10	Statutory / Legal Matters (Comprehensive EIA study, Pollution Control Clearance Application Fees for NOC & Consent, Clearance from Factory Inspector & Chief Electrical Inspector, clearance for shifting mill from Arasmeta Cement Plant etc.)	0.97	
11	Geo-Technical Investigations/ Soil Testing	0.35	
12	Sub - Total	430.32	
13	Contingency @5 % on Sub-Total	21.50	
14	Office and Travelling Expenses	0.54	
15	Site Drawings , Tracings , Blue Prints	0.14	
16	CAD-Plotter with software	0.50	
17	Total For Normal Schedule(12 to 14)	453.00	
18	Cost of New Shell for Arasmeta CM-3	6.00	
	Additional Costs for Crash Schedule		
18	Structural Steel Beams in Place of RCC	6.50	
19	Deployment of Additional Resources by the contractor (2% of Rs.430.82 assumed)	8.50	
20	Total Project Cost For Crash Schedule	474.00	

Normal Schedule : Plant Commissioning > December 2001.

Crash Schedule : Plant Commissioning > October 2001.

NOTE: Cement Mill No.3 with all its mechanical auxiliaries and electrical equipments which can be used will be shifted from Arasmeta Cement Plant. Inspection of the equipments, Checking and collection of drawings at Arasmeta Cement Plant has been done from 23 - 24 January 2001.

- The cost is Net of MODVATE.

- Miscellaneous items like Time Sheet, Roads, Project Construction Power and water excluded in the cost estimate.


R.K. GUPTA
Sr. Manager (Projects)

Date : 8th February, 2001 / 30th March, 2001.

PROCESS and QUALITY CONTROL MEASURES

Jojobera Cement Plant produces Portland Pozzolana Cement as per IS 1489(Part1) :1991 by intergrinding clinker (received from our own state-of-art clinkerisation plant at Sonadih & Arasmeta), fly ash (received from the most modern power plant of M/S Tata Power, situated adjacent to the cement plant) and gypsum, received from Rajasthan.

Following most modernized and sophisticated equipment are available in the Plant to produce consistently better quality product at every stage of processes.

1. X-ray spectrometer of OXFORD, England has been installed for quick and accurate analysis of raw materials, intermediate and finished products and thereby able to take rapid corrective action at each stage.
2. CILAS- Particle size analyser has been installed to analyse particle size distribution of fly ash and ensure receipt of good quality fly ash. Also this helps to get an optimal particle size of finish products and thereby to achieve better strength and durability of cement.
3. PLC based Control System is available for automatic operation of Cement mill and packing plant, thus eliminating manual operational errors resulting to produce and deliver consistently better quality of cement. These control systems automatically adjust the process parameters like pressure, draught, temperature, cooling etc.
4. High efficiency O-Sepa separator is installed in mill to distribute homogenized particle size for achieving uniform and high quality of cement.
5. Packing Machines - Electronic roto packers are installed to pack proper quantity of cement in PP bags. Automatic truck & wagon loading machines are available for dispatch of cement by rail and road.

Quality control starts from receiving of raw materials and ends at dispatching the Finish products, where samples are collected in each and every stage of the raw materials unloading point, cement grinding and Packing stage thr'o auto samplers which provide continuous sampling. Sampling schedule, analysis etc, are followed as per the Scheme of testing and Inspection of BIS and well defined in Quality system - ISO 9001:2000.

Quality system not only meets the requirements of BIS but also exceeds to all specified norms and standards. The corrective & preventive measures are being taken immediately after reviewing the deviation in Quality Norms.

In addition, the quality control laboratory is well equipped with the modern testing equipment to comply all requirements as specified in BIS/ISO system.

The lab is also equipped with international standards samples and participating in national and international proficiency test.



LAFARGE INDIA LTD

JOJOBERA CEMENT PLANT
P.O. RAHAGORA, JAMSHEDPUR, JHARKHAND - 831016
PH. : 0657-286485 / 276873 FAX : 0657-285702

Copy to Mr. Ramji
Stocknumber G1509452

PURCHASE ORDER

SUPPLIER CODE : AJ174

Advance Scientific Equipment Pvt.Ltd.
5A, Nurula Doctor Lane (West Range)
2nd Floor
Kolkata

ORDER NO: MATERIAL CAPITAL
DATE: Direct Departmental Store
376513 / 1 / 1 / V

Please supply the following goods according to the terms, conditions and instructions specified hereon, overleaf and attached. All goods should be consigned to Lafarge India Ltd, and not to self, and booked to Lafarge India Ltd, Jojobera, by Road, Freight prepaid, unless otherwise specified. A copy of packing list showing our Order No. must be included in the packing and in addition to what is specified under Clause 8 overleaf, an extra copy of this packing list quoting our Order should be posted direct to the Stores Department, Lafarge India Pvt Ltd, Jamshedpur 831016.

The above number must be quoted on all correspondence. Invoices, bills and marked on all packages.

QUOTATION REF:

DATE: DM/CIL/1064LD/

DESCRIPTION

21-NOV-03 QUANTITY RATE

Our Ref. Stock Number

1) (1)

Rupees Twenty Four Lac Fifty Thousand and Zero paise only

Lump Sum 2450

CILAS FRANCE MAKE LASER BASED PARTICLE SIZE ANALYSER MODEL CILASS 1064LD WITH FOLLOWING: -
--is system is comprised of :
1. TECHNICAL SPECIFICATIONS, OPTICAL BENCH, SAMPLING HANDLING UNIT, DRY FEEDER, DATA PRESENTATION, CALIBRATION, MANUFACTURING INSTRUMENTS CONTROL, MIMIC SCREEN, AIR COMPRESSOR, VACUUM CLEANER AS PER YOUR OFFER NO. AS ABOVE

COMPUTER CONFIGURATION:
COMPUTER IMB MAKE MODEL NO 8187-F6A AS PER LAFARGE STANDARD.
COLOUR PRINTER HP MAKE
OS - WINDOW 2000 PROFESSIONAL VERSION
MULTIMEDIA KEYBOARD WITH SCROLL MOUSE.

Delivery Schedule :-
1.000 by 05-JAN-2004

Extra Charges

Central Sales Tax (Concessional) (Extra) 4.00 %
D.F to be issued by Acc. on bill receipt

Pay Terms :- 100.00 % Within 30 days against your bill duly certified by the Dept.

Comments

PRICE IS F.O.R JOJOBERA INCLUSIVE OF PACKING, FORWARDING, INSTALLATION & COMMISSIONG CHARGES BUT EXCLUSIVE OF SALES TAX.

GUARANTEE/WARRANTY: 2 YEARS FROM THE DATE OF SUCCESSFUL COMMISSIONING.

Sd CC: Accounts

Mr. Ramji Gautam

APP. VALUE

CH. A/C

SANCTION

COPY TO Stores

For LAFARGE INDIA LTD

AUTHORISED SIGNATORY
PURCHASE DEPARTMENT



LAFARGE INDIA LTD

JOJOBERA CEMENT PLANT
P.O. RAHARGORA, JAMSHEDPUR, JHARKHAND - 831016
PH. : 0657-286485 / 276873 FAX : 0657-285702

Stocknumber G1509452
Page No :

SUPPLIER CODE : AJ174

Advance Scientific Equipment Pvt.Ltd.
5A,Nurula Doctor Lane(West Range)
2nd Floor
Kolkata
PIN - 700017

PURCHASE ORDER

MATERIAL CAPITAL
Direct Departmental Stores
ORDER NO: 3J6543 / 1 / 1 / VM
DATE: 15-DEC-2003

Please supply the following goods according to the terms, conditions and instructions specified hereon, overleaf and attached. All goods should be consigned to Lafarge India Ltd, and not to self, and booked to Lafarge India Ltd, Jojobera, by Road, Freight prepaid, unless otherwise specified. A copy of packing list showing our Order No. must be included in the packing and in addition to what is specified under Clause 8 overleaf, an extra copy of this packing list quoting our Order should be posted direct to the Stores Department, Lafarge India Pvt Ltd, Jamshedpur 831016.

The above number must be quoted on all correspondence, Invoices, bills and marked on all packages.

QUOTATION REF: DM/CIL/1064LD/
DATE: 21-NOV-03

DESCRIPTION

QUANTITY

RATE

PAYMENT: 50% AFTER RECEIPT AND APPROVAL OF THE MATERIAL WITHIN 30 DAYS & BALANCE AFTER SUCCESSFUL COMMISSIONING. YOU WILL ALSO SUBMIT PBG OF 10% OF THE P.O VALUE VALID FOR 2 YEARS FROM THE DATE OF COMMISSIONING.

SUBMIT YOUR BILL IN DUPLICATE ADDRESSED TO FINANCE DEPT.MENTIONING OUR ORDER REF.

DURING WARRANTY PERIOD YOUR SERVICE ENGINEER WILL VISIT 3 TIMES IN A YEAR

YOU WILL ALLOW 20% DISCOUNT ON SPARES AS PER PRICE LIST (ATTACHED)

ALL OTHER TERMS & CONDITIONS AS PER OUR MANUAL ORDER LIPL/ACP/CPO/SCA/JCP/10 DATED 11-12-03.

Sd CC: Accounts

APP. VALUE

CH. A/C Rs. 2548000.00

SANCTION 999 / F40

For LAFARGE INDIA LTD

COPY TO Stores

AUTHORISED SIGNATORY
PURCHASE DEPARTMENT

LAFARGE

LAFARGE INDIA LTD

JOJOBERA CEMENT PLANT

P.O. RAHARGORA, JAMSHEDPUR, BIHAR 831016

PH: (0657) 488485 FAX: (0657) 486702

Stocknumber 61509452

SUPPLIER CODE : SJ065

Scientific & Chemical Supply Co.,
17, Netaji Subhas Road 2Nd Floor
Calcutta
PIN - 700001

PURCHASE ORDER

MATERIAL REVENUE
Direct Departmental Stores

ORDER NO: 010022 / 1 / 1
DATE: 22-JUN-2000

The above number must be quoted on all correspondence,
Invoices, bills and marked on all packages.

QUOTATION REF: Q/055/2000 dt.20/5/2
DATE: 000

Supply the following goods according to the terms, conditions and instructions specified hereon, overleaf and
All goods should be consigned to Lafarge India Ltd, and not to self, and booked to
Lafarge India Ltd, Jojobera, by Road, Freight prepaid, unless otherwise specified. A copy of packing list showing
the No, must be included in the packing and in addition to what is specified under Clause 8 overleaf, an extra
packing list quoting our Order should be posted direct to the Stores Department, Lafarge India Pvt Ltd,
Jamshedpur 831016.

Our Ref.	Stock Number	DESCRIPTION	QUANTITY	RATE
1) (1)		Rupees Forty Seven Thousand and Zero paise only Compression testing machine, Electrical-cum- hand operated, single gauge, capacity:25 KN Suitable for standard compression tests of 50mm cube specimen of pozzolonic materials as per IS : 1727-1967. Delivery Schedule :- 1.000 by 29-JUL-2000	1.000 nos	47000.00000 per nos
2) (2)		Rupees Eleven Thousand and Zero paise only Integral type proving ring suitable for above compression testing machine capacity : 20/25KN with calibration certificate from NPL, New Delhi. or NCBM, Ballabgarh. Delivery Schedule :- 1.000 by 29-JUL-2000	1.000 nos	11000.00000 per nos
<p><u>Extra Charges</u></p> <p>packing & forwarding (Extra) Rs. 3500.00 Central Sales Tax (Concessional) (Extra) 4.00 % D.F to be issued by Acc. on bill receipt service (Extra) Rs. 5000.00</p> <p>Delv Pt :- CEMENT DIVISION (TATA STEEL) Delv Mode :- To be delivered by road Price Trm :- Free delivery at Cement Division.</p>				

Delivery Required

Conto...

CC: Accounts

APP. VALUE
CH. A/C
SANCTION

For LAFARGE INDIA LTD

AUTHORISED SIGNATORY
PURCHASE DEPARTMENT

LAFARGE**LAFARGE INDIA LTD**

JOJOBERA CEMENT PLANT

P.O. RAHARGORA, JAMSHEDPUR, BIHAR 831016

PH: (0657) 488485 FAX: (0657) 486702

Stocknumber 61509452

SUPPLIER CODE : VJ011

Venel Instruments
7, Lower Range,
Calcutta.
PIN - 700017**PURCHASE ORDER**

Direct Departmental Stores

070017 / 1 / 1

ORDER NO: 31-MAY-2000

DATE:

The above number must be quoted on all correspondence.
Invoices, bills and marked on all packages.

VI/AIM/BH/DTN/1399 d

QUOTATION REF: t.13/05/2000

DATE:

Supply the following goods according to the terms, conditions and instructions specified hereon, overleaf and
All goods should be consigned to Lafarge India Ltd, and not to sell, and booked to
India Ltd, Jojobera, by Road, Freight prepaid, unless otherwise specified. A copy of packing list showing
No. must be included in the packing and in addition to what is specified under Clause 8 overleaf, an extra
packing list quoting our Order should be posted direct to the Stores Department, Lafarge India Pvt Ltd,
831016.

Our Ref.	Stock Number	DESCRIPTION	QUANTITY	RATE
1) (1)		Rupees Nineteen Thousand One Hundred and Zero paise only Flow table, electrically operated, as per IS : 5512-1983, Model no. AIM-411 Delivery Schedule :- 1.000 by 30-AUG-2000	1.000 nos	19100.0000 per nos
2) (2)		Rupees Twenty Nine Thousand and Zero paise only Mortar mixer, cap.5kg as per IS : 10890-1984 Model - AIM-412 Delivery Schedule :- 1.000 by 30-AUG-2000	1.000 nos	29000.0000 per nos
3) (3)		Rupees Thirty Three Thousa Seven Hundred and Zero paise only Vibrating machine for casting cement mortar cubes of 70.6mm size as per IS : 10080 Delivery Schedule :- 1.000 by 30-AUG-2000	1.000 nos	33700.0000 per nos

Contd...

Delivery Required

CC: Accounts

APP. VALUE
CH. A/C
SANCTION

For LAFARGE INDIA LTD

S. AUTHORIZED SIGNATORY
PURCHASE DEPARTMENT



Advance Scientific Equipment Pvt. Ltd.

5 A, NURULA DOCTOR LANE (WEST RANGE),
KOLKATA - 700 017. • TEL : 033 - 2247 6110 / 2281 6869
FAX : 033 - 2280 8261 • E-mail : kolkata@advscientific.com
Website : www.advscientific.com

Region : Eastern

Service Report

Date : From 17/2/04
To 20/2/04

Customer : Lafarge India Pvt. Ltd.

Instrument : CILAS 1064 L

Address : Tojobera Cement Plant
Jamshedpur

Serial No. : 372

Installation Warranty

Contract Chargeable

Contact Person : Mr. K.C. Pipilai

Fault Report : Installation & Commissioning of CILAS
Particle Size Analyzer, Model 1064 L/D

- Service Performed :
- ① Checked all parameters of the instrument and found O.K.
 - ② Connected the instrument with Computer, Vacuum Cleaner and Air Compressor.
 - ③ Analyzed fly ash samples in wet method and found results satisfactory.
 - ④ Also analyzed various samples of cement, slag and clinker in dry method.

The instrument is installed.

Results at higher range to be verified further.

Customer's Remark :

Engineer's Remark :

Customer's Acceptance :

For Advance Scientific Equipment Pvt. Ltd.

The above work has been carried out to our satisfaction.

Sign :

Sign :

Name :

Name :

Designation :

Designation :

A. BISWAS

Service Engineer

che



KAILAS ESPLANADE, 'B' WING, 2ND FLOOR,
OPP. SHREYAS TALKIES, L.B.S. MARG,
GHATKOPAR (W), MUMBAI-400 086.
TEL. : 500 2631 / 500 2632
FAX : (91-22) 5002636
E-Mail : asceq@bom3.vsnl.net.in

Region: Eastern

Date : From 30/09/02
To 03/10/02

Service Report

Customer: LAFARGE CEMENT
Address: Jojobera Cement Plant
Tamshedpur

Instrument: Lab X-3500
Serial No.: 12786
 Installation Warranty
 Contract Chargeable

Contact Person: Mr. K.C. Piplai - Sr. Mgr - QC

Work Reported: Installation and Commissioning of
Oxford's Lab X-3500 Cement Analyzer.

Service Performed: ① Unpacked the instrument and found
everything O.K. after inspection.
② Resolution of the instrument was found 22.9%
Calibrated the instrument for PSC, PSC (Ca/S)
PPC, PPC (Ca/S) with their given standards.
Analyzed various known and unknown samples
found results satisfactory.
Showed their personnel how to do analysis.
The instrument is installed & commissioned.

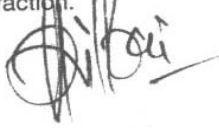
Instrument is running O.K.

Customer's Remark :

Engineer's Remark :

Customer's Acceptance :

The above work has been carried out to
our satisfaction.

Sign : 

Name :
Designation :

For Advance Scientific Equipment Pvt. Ltd.

Sign : 

Name : A. BISWAS
Designation : Service Engineer