Ready Mix Concrete (RMC) Sourcing Policy

The goal of the policy is to provide concrete of acceptable quality in a reliable (timely) fashion while ensuring lowest CTC (cost-to-Company) for Lodha. The guidelines below are directional in nature and the users of the guidelines are expected to make all steps to further improve upon these in the interest of the goals stated hereinabove.

Sourcing of concrete through

A) Captive (on site) plants
B) Non-Captive (off site) plants
C) Site mix concrete

CAPTIVE PLANTS

1) Procedure for setting up captive RMC plants:
   - An RMC captive plant to be installed at sites where the project quantity requirement is sufficient to make a business case for RMC suppliers & enough space is available to set up a RMC plant.
   - The choice of capacity of RMC plant to be installed will depend on the project volumes & peak requirements of RMC which will be estimated in advance. The RMC plants should ideally be of Schwing Stetter or Liebherr make.
   - The size of the plot required will depend on the capacity of the plant to be installed & also upon the space available at site. Ideally a 120 cum plant will required 60,000 sq ft space, 90 cum plant will require 40,000 sq ft area & a 60 cum plant will require 30,000 sq ft area to accommodate aggregate bins, water storage tanks, waste settlement tanks, Plant & machinery, offices, labs & for TM / loader movement. The above area has been assumed after taking into consideration that suppliers will require more space to stock the aggregates. Ideally with this area supplier should stock 5 days inventory of aggregates.
   - In case Lodha is not in a position to provide the space as required, then some compromise will have to be done in aggregates inventory.
   - The choice of captive RMC supplier will depend on past track record in terms of quality & supplies. Also presence of back up RMC plants in the vicinity will be an added advantage. Typically A grade suppliers like Ultratech, ACC, Lafarge & RMC India to be considered.

2) Mix Design:
   - Concrete mix design is normally proposed by the RMC supplier for the different grades & accordingly trials are conducted to verify the same. The trials to be conducted at Lodha lab or RMC suppliers in house lab at the captive plant.
   - The mix designs proposed by the suppliers should be in line with IS Code 10262.
   - The lowest costing of following:

- Standard Lodha mix design (attached as Annexure A for M 15 to M 40) (same shall be reviewed by the Lodha QA team every year in March)
- Actual mix design (vendors are encouraged to provide a mix design which is more economic than the Standard Lodha mix design)

shall be used for the purposes of calculation of raw material content for all grades upto M40. Since Standard Lodha mix design assumes aggregates from a particular source, Lodha will adjust the transportation cost difference from site to site. However, if for any reason, Supplier chooses to buy aggregates from another source, Lodha shall NOT pay more than the cost based on the costing available at its preferred source and the transportation cost to the concerned site – any difference shall be solely to the account of the vendor.

3) RMC pricing:

- RMC pricing will be based on prices of the following raw materials every month - cement, flyash, aggregates, crush sand & admixtures. Lodha shall publish its rates before 25th day of the previous month based on its actual cost at source and a transport charge allowance (per km from source to site as calculated by actual road distance in 5 km buckets). The raw material rates on the 25th of the previous month (or nearest working day thereto) shall be considered as the price of raw material for the coming month. Lodha shall not pay for aggregate rates beyond its published rates for the month – payment shall be the lower of actuals or Lodha published rates.
- In case any special type of concrete is required which requires early strength or better workability (without 20mm aggregates) additional cost will be given to the RMC supplier depending upon the revised mix design. For the key special types of concrete eg. temperature controlled, early setting, pumping for height > 150 m, the basis of variation shall be covered in the agreement.
- The rates finalised will be valid for the entire month. Only in exceptional cases where prices of raw materials become extremely volatile, the rate changes may be considered in the middle of the month with prior approval of Procurement council head.

4) Measurement of concrete quantity received:

- The project sites shall have the right to randomly weigh the transit mixers during slab pours & the average of transit mixers weighed will be applied to the entire pour quantity.
- The weighment can be done at the weighbridge of the captive plant (after cross checking the calibration on a periodic basis) or at the project weigh bridge.
- maximum variation allowed will be + - 1%, subject to such variation being nil or positive over any 3 month period, failing which the negative quantity shall be debited to the vendor

5) Aggregate backward integration:

- Since aggregates is a major cost component in RMC, Lodha may consider tying up with quarry operators / operating own quarry through 3rd party to reduce aggregate costs and vendors shall be responsible for purchasing aggregates from this source / another source with equivalent cost.

6) Electricity & water supply at RMC plants:

- If possible, Lodha to provide Metered water supply to RMC suppliers at the plant on chargeable basis
    i. Preferred option for supply to be piped water connection till plant (e.g. MIDC water at Dombivali)
    ii. If not above, Borewell water to be tested and considered if acceptable water test results
- Electricity connection will be provided by Lodha to the captive RMC plants. Electricity connection will be given upto one point at the plant premises. Further internal wiring work within the plant needs to be done by the RMC supplier.
- In case electricity connection is not provided & RMC supplier if forced to run the plant on DG then additional cost of Rs 30 per cum will be given to supplier.
- Cost of water and electric supply, including all premiums and levies, shall be borne by the RMC vendor and this shall not be free of cost.

7) Testing of raw materials:

- Project QC team at sites which have captive plants shall have the right to conduct periodic testing of the raw materials procured by the RMC supplier.
- RMC supplier shall cooperate with the QC team & ensure that raw materials procured are of the right quality & as per the specifications approved at the time of mix design approval.
- Project QC team shall have the right to conduct 3rd party testing of the raw materials once in a quarter/random sampling as and when required by lodha QC team.

8) Concrete acceptance criteria:

- The acceptance criteria for concrete supplied will be cube strength results at 28 days for concrete up to M60 grade.
- For concrete above M60 grade the strength acceptance criteria will be cube / cylinder strength results at 56 days. Acceptance criteria will be as per project / structural consultant's requirement
- In case of cube / cylinder results do not achieve the desired results, Lodha to conduct NDT tests followed by core tests to derive actual strength of concrete.
- Such NDT / core test costs to be borne by RMC supplier if cubes / cylinder results have failed.
- Strength acceptance criteria of concrete will be as follows.
    1. The 28 days compressive strength shall not be less than specified

compressive strength of the concrete.

2. In exceptional cases, the project in charge may decide to accept the concrete even when 95% of the cubes have passed the desired strength criteria. Provided however such deficiency in strength of 5% cubes should not be more than 4% of the strength specified.

- Normally if cubes have achieved the desired strength the core should not fail, However in case such a situation arises management to take a final call on the same in consultation with the structural consultant to look at the reasons for the same which can be faulty concrete, mis-handling of concrete or faulty structural design.
- In case it can be reasonable proved that concrete supplied by supplier is faulty then penalty will be costs (including of the material supplied + rectification works) *125%. All decisions of the COO in this regard shall be binding on all parties.

9) Concrete required for trials

- Concrete required for trials to be conducted will be provided by the RMC supplier free of cost. However the concrete requested for trials should be reasonable & agreeable to all the parties concerned.

10) Policy for provision of concrete pump:

- In any contract (FML/FLO/PML), concrete pump shall be arranged by civil contractor. The terms will specify that contractor shall be responsible for securing supply of concrete as well as managing all pumping related activities.
- In case the contractor appointed is not able to arrange the pump then as an exceptional case Lodha / RMC supplier will provide the concrete pump subject to minimum requirement of 40 cum per pour.

11) Transit Mixer utilization:

- Monitoring of TM utilization to be done across sites in-order to identify locations where TM utilization can be improved.
- During pumping pours the TM output should be 22-24 cum per day & for dump requirements it should be 12-15 cum per day.
- Average output per TM will be 18-20 cum per day considering the above factors.
- RMC Vendor shall be responsible for ensuring that there are adequate no of transit mixers available on site assuming the output of 18-20 cum per day per transit mixer. Lodha CM shall be responsible for ensuring that transit mixers are used efficiently and not held up during delivery.

12) TM turnaround time:

- Concrete required for slabs - In all buildings, concrete for slabs to be supplied from RMC plants only and unloaded using stationary pumps within 45 minutes of delivery of concrete at site (delivery time is to be taken as time at which the transit mixer reaches project site) in order to improve TM turnaround time.

- Since the shelf life of RMC is maximum 3 hours from time of production, project sites to ensure that no concrete is unloaded beyond the 3 hour timeframe. Sites to ensure that concrete are unloaded within the 3 hour timeframe. Project sites to accept the entire challan quantity even if there is any balance concrete in the transit mixer after 3 hours.

13) Measuring supply chain performance of RMC:

- Ordering of RMC – Daily RMC ordering should be done through the RMC online portal which has been implemented since 2010. The order needs to be placed one day in advance on the portal by the respective project team within the timeframe specified so that supplier can manage the schedule effectively. Once the delivery of the concrete is done, the respective project site needs to give feedback for the same in the portal.

- At the end of every month Procurement team to release the monthly performance report which will be in the following format.

Delivery Status Name	Dombivili	North Mumbai	South Mumbai	Thane	Grand Total
On Time Delivery	8,115	1,613	2,342	2,529	14,599
Delay More than 2 Hrs	1,704	280	205	516	2,705
Not Delivered	800	44	55	122	1,021
Order Cancelled	1,965	371	986	1,522	4,843
Total orders for the month (A)	12,583	2,308	3,588	4,689	23,167
Orders cancelled by Const Mgmt (B)	1,965	371	986	1,522	4,843
Net order for the month (A-B)	10,619	1,937	2,602	3,167	18,324
Total Supply of RMC for the month C	9,819	1,893	2,547	3,045	17,304
Gross % of order fulfilled (A-B)/C	92%	98%	98%	96%	94%
Out of Total Supply of RMC for the month, % supplied within 2 hours of desired time window	83%	85%	92%	83%	84%

- The monthly RMC supply performance targets are as follows
  - ✓ During non monsoon season - 90% order fulfilled rate & 75% of the orders within 2 hours timeframe.
  - ✓ During monsoon season - 80% order fulfilled rate & 70% of the orders within 2 hours timeframe

14) Commercial supplies from captive plant:

- Captive plant supplier will be allowed to sell concrete commercially provided requirements within the site or other Lodha projects in the vicinity are fulfilled. Only then will supplier be allowed to do commercial sales. Lodha shall have a right to stop commercial supplies if order fill rate falls < 95%.

15) Free supply of aggregates:

- New Billing model to be rolled out across captive plants- separate billing for aggregates on aggregates supplier & to be shown as a free issue & another billing for balance RMC costs by RMC supplier which will include conversion charges & profit.
- Supply chain management of aggregates will however continue to be the responsibility of the RMC supplier.
- This model will be compulsory applicable to all FML civil contractors and if they are unwilling to follow this process, Lodha will compensate them for RMC costs (basic rate variance) only as per the costs that would be incurred by following this process.
- This model will be applicable for all new projects where captive RMC plants are being set up. However it will be the responsibility of the civil package team to ensure that FML contractor agrees for this arrangement.

16) Concrete wastage:

- Supplier responsibility for supply of concrete volume will be up to point of supply i.e. crane bucket in case of manual unloading or concrete pump during pumping pours.
- Responsibility will be with RMC supplier if wastage is caused due to concrete not retaining slump as per the value specified by/in Lodha / Contract document_until the slump retention period of 3 hours from batching time.
- Any wastage during pumping & in pipeline will be to Lodha / civil contractor account subject to RMC supplier meeting the slump retention clause mentioned above.
- Necessary arrangements must be ready at site to use the concrete emptied from pipeline after completion of pumping.

17) Captive plant utilisation:

- Captive RMC plant operator shall be responsible for ensuring that there is continuous production & supplies from the captive plant (except for planned repairs or maintenance) to Lodha projects as per site requirements. It is assumed that plant will give minimum 50% production of the rated capacity & the working hours assumed is 16 hours per day. In case captive plant operator is not in a position to provide the concrete as per site requirements, Lodha will procure the concrete from an alternate source & the differential cost will be debit to the RMC supplier at cost plus 25%.

NON CAPTIVE RMC SUPPLIES

- In case of sites where captive plants are not set up the concrete will be sourced from non-captive plants in the vicinity. The criteria for the same will be L1 rates & approval of concrete mixes by Lodha QC team.
- Commercial supplies of concrete to be taken to the extent possible from Grade A suppliers who have good quality track record like Ultratech, ACC, Lafarge and RMC India.
- Concrete can be procured from suppliers other than grade A suppliers provided the concrete mix approved by Quality has sufficient margin of safety or to take one grade higher to avoid any risk.
- Where captive plants are setup, ideally all the concrete requirements need to be sourced from there for that particular project site. However in exceptional cases the RMC Procurment team can procure the concrete from Non captive plants when slab timings of different buildings are clashing or plant has been taken for preventive maintenance with prior information.

SITE MIX CONCRETE

- Site mix concrete to be permitted (columns only) for all buildings with height less than 30 m. At these sites, stronger QC processes will be needed at the site mixer locations. In all other buildings no site mix concrete shall be permitted (except 1% for emergency situations). In all other buildings with height greater than 30m, concrete required for columns to be supplied from RMC plants only. No site mix shall be allowed.

This policy shall be controlled by the RMC team within Procurement – all suggestions should be directed to Level 1 incharge of RMC supply.

Annexure A

Grade of Concrete	M 15	M 20	M 25	M 30	M 40
Mix Details:					
Total Binder, kg	310	350	400	430	540
Cement Content,kg	220	250	300	320	415
Fly ash Content, kg	90	100	100	110	125
Micro Silica, kg	0	0	0	0	0
Water Binder Ratio	0.548	0.486	0.425	0.400	0.324
Total Free Water, kg	170	170	170	172	175
Total aggregate, kg	1977	1922	2011	1866	1769
CA II, 20 , kg	757	675	717	717	726
CA I ,10 , kg	372	362	382	399	425
Crushed sand, kg	848	885	912	750	618
Natural Sand, kg	0	0	0	0	0
Admixture, kg	3.41	3.85	4.40	4.73	5.67

Note:

1. **Source of aggregates considered in standard mix design is Uran near Navi Mumbai.**