

# **Veermata Jijabai Technological Institute**

**Matunga, Mumbai - 400019**

**Civil and Environmental Engineering Department**

**Brief report on**

**“RMC - Modern Trends in Concrete Production through Weigh  
Batching and Placing by Pumping”**

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# VEERMATA JIJABAI TECHNOLOGICAL INSTITUTE

(V.J.T.I)

MATUNGA, MUMBAI – 400019.



Civil and Environmental Engineering Department



Indian Concrete Institute

**Indian Concrete Institution**

**(ICI) – V J T I Student Chapter**

**Industry-Institution-Interaction**

**Expert Lecture**

on

**“RMC - Modern Trends in Concrete Production through Weigh Batching and Placing by Pumping”**

by

**Er. Manish Mokal**

(DGM, AFCONS Infrastructure Ltd. & Faculty – Ready Mix Concrete Manufacturer Association, Mumbai)

**Wednesday 1<sup>st</sup> March 2023**

**Time: 11:00 am onwards**

**Venue: Civil Seminar Hall**

**Organising Committee**

**Dr.Sumedh Mhaske**  
Mentor, ICI-VJTI student  
Chapter

**Dr.Abhaykumar Wayal**  
Head, Civil and Env.  
Engg.Dept

**Dr.Vishal Thombare**  
Chairman  
ICI Mumbai Chapter

**Mr. Pravin Chaudhari (Assistant Prof., VJTI)**

**Mr. Chetan Bhole (Lecturer, VJTI)**

**Mr. Naveed Akhtar (Research Scholar, VJTI)**

**(Invitation- Industry-Institution-Interaction Expert Lecture – VJTI student chapter)**

An expert lecture on “RMC - Modern Trends in Concrete Production through Weigh Batching and Placing by Pumping” by Er. Manish Mokal (DGM, AFCONS Infrastructure Ltd. & Faculty – RMCMA, Mumbai)”

Veermata Jijabai Technological Institute’s, Civil and Environmental Engineering Department in collaboration with Indian Concrete Institute (ICI) and Ready Mix Concrete Manufacturers Association (RMCMA) organised an expert lecture under ICI student chapter on Wednesday 1<sup>st</sup> of March 2023.



**ICI – VJTI student chapter**

**Objective of Event:**

The main objective of the event is to fill the gap between academic and industry by organizing expert lecture through industry-institution interaction.

**Scope of Expert Lecture:**

The scope of the lecture is beneficial for civil engineering students of final year diploma, third year degree and master of technology.

**Welcome to the guest:**

The guests from ICI- Mumbai chapter Dr. Vishal Thombre and from RMCMA principal consultant Mr. A. K. Jain, Faculty Mr. Manish Mokal (Deputy General Manager – AFCON

infrastructure) and manager Mr. Pramod Tambe. Honourable Chief Guest Er. Manish Mokal and Guest of Honour A. K. Jain were welcomed by Dr. Sumedh Mhaske and Dr. A. S. Wayal.



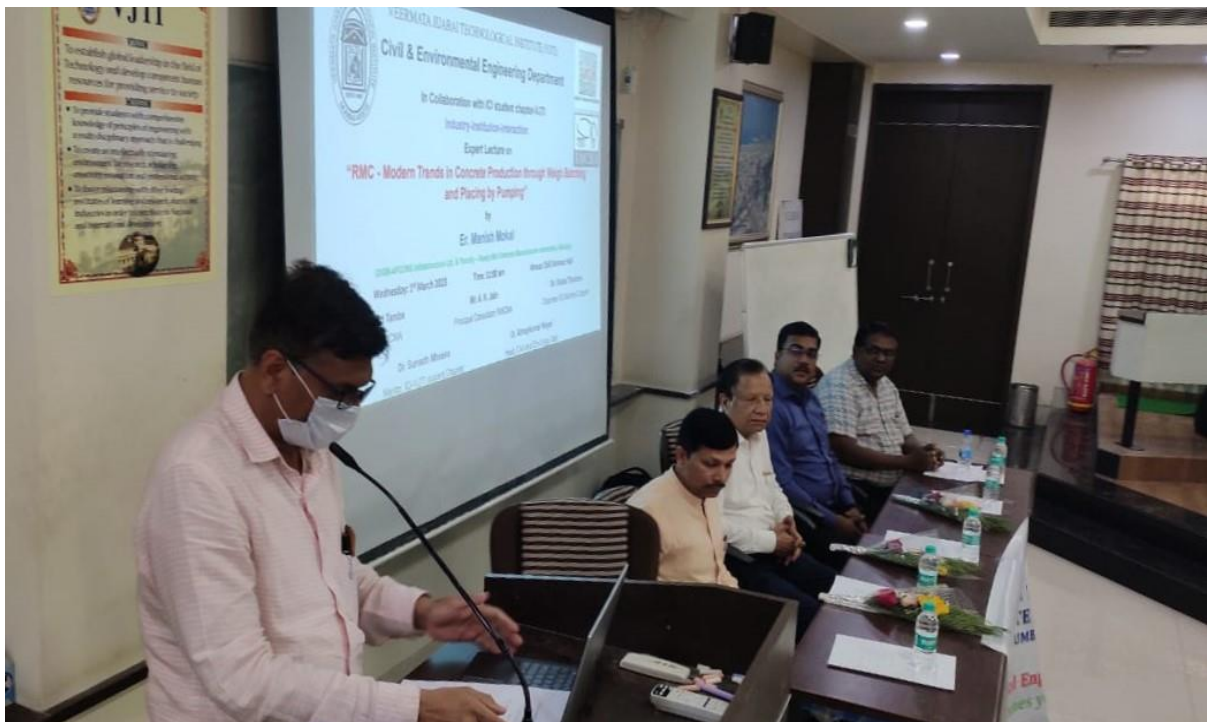
Honourable Guest Dr. Vishal Thombre (ICI Chairman Mumbai Chapter) and Mr. Pramod Tambe (Manager RMCMA) were welcomed by Mr. Pravin Chaudhari and Mr. Naved Akhtar.





**Speeches during program:**

Head of Civil and Environmental Engineering Department Dr. A. S. Wayal introduction of the department and about the event. Next to Head, Dr. Vishal Thombre speaks about institute-industry interaction benefits, future support from ICI and congratulated the students about ICI-VJTI student chapter.





**Ready mix concrete Manufacturer's Association:**

Ready Mixed Concrete Manufacturer's Association (RMCMA) established in March'2002. It is Non-profit industry Organisation of leading RMC Producers in India.



(Mr. A. K. Jain sir were invited to share few words about and to introduce about the organisation.

#### **Vision of RMCMA:**

To make Ready-Mixed Concrete the preferred building material of choice as the best environmental friendly and sustainable construction material for construction.

#### **Mission of RMCMA:**

To provide leadership to Ready-mixed Concrete Industry in India without sacrificing the interests of end-users, designers, specifiers and owners.

#### **Major Activities of RMCMA**

- To represent RMC industry interests at Local, State and National level.
- To actively participate in formulation and Revision of Standards relating to Concrete.
- Training programs and dissemination of knowledge.
- Co-ordination for Certification of RMC plants through QCI/BIS
- To participate in National and International Forums for promotion of RMC.
- To promote best practices in Safety, Health and Hygiene in RMC plants

#### **Methods of Producing Concrete**

- Manual Mode -- Volume batching
- Mechanical Mode – Weigh batching

#### **Drawbacks of Volume Batching**

- Inaccurate batching of materials.
- Inaccurate correction of water absorbed by sand and aggregates.
- Inconsistent w/b ratio.
- Very small batch ( $0.2 - 0.3 m^3$ ) and variation batch to batch.
- Low volume production, speed of projects is hampered.
- Inconsistent Quality of Concrete.

#### **RMC Technology Involves**

- Weight batching of raw materials.
- Dosing and mixing in computerized plant.
- Transportation to Site through Transit Mixers.
- Placing of concrete through pumping.
- Testing of fresh and hardened concrete in Plant Laboratory.

### **Highlights of batching plant**

- Capacity ranges from 30 to 150 Cubic Metre per hour
- Mixing either through pan type or twin shaft type mixers with Semi-automatic or fully automatic control.
- The batch capacity ranges from 0.5 to 2.5 Cum
- The central plants are equipped with laser sensors to sense moisture in sand.
- The storage bins are generally used of 2 types viz. Star bins and Elevated bins.

### **Transportation of Concrete – Transit Mixer**

- Capacity 6 cubic meter.
- Produced in India in collaboration with various foreign firms and also produced indigenously.
- Agitating speed is between 2 and 6 revolutions per minute with the mixing speed of 4 to 16 revolutions/minute.
- The mixing drum and spirals are made of highly wear resistant steel with a high percentage of chromium (0.8%) and nickel (0.6%).

### **Advantage of RMC**

- Consistent and Assured Quality. Factory made product.
- Ready-made recipe for all types and grades of concrete.
- No time is lost in Mix design.
- Faster speed of construction due to availability of large quantity of concrete at site.
- Reduction in wastage of materials and labour at site.
- Clean and eco-friendly operations.

### **How RMC helps in achieving durable concrete & structures**

- Use of Quality raw materials from selected sources.
- Strict control on w/b ratio.
- Well tried and tested recipe of Mix.
- Weight batching and computerized operations ensuring consistency and very low S.D.
- Pumped concrete is homogenous with minimum air voids and needs minimum compacting effort



## Introduction to RMC



Chief Guest and Speaker Mr. Manish Mokal presentation Expert Lecture on RMC

### Why Concrete?

- Concrete is the 2<sup>nd</sup> most consumed material after water
- Concrete is one of the most versatile, durable, and cost effective building materials known to man.
- Concrete is completely non-combustible and has a slow rate of heat transfer, making it highly effective against the spread of fire.
- Concrete requires very little maintenance and is easy to clean.
- Concrete is exceptionally durable.
- Concrete allows endless possibilities for creative custom design

They explain about evolution of concrete mixing process-

Hand mixing → Site mixing → RMC plant

### Components of batching plant

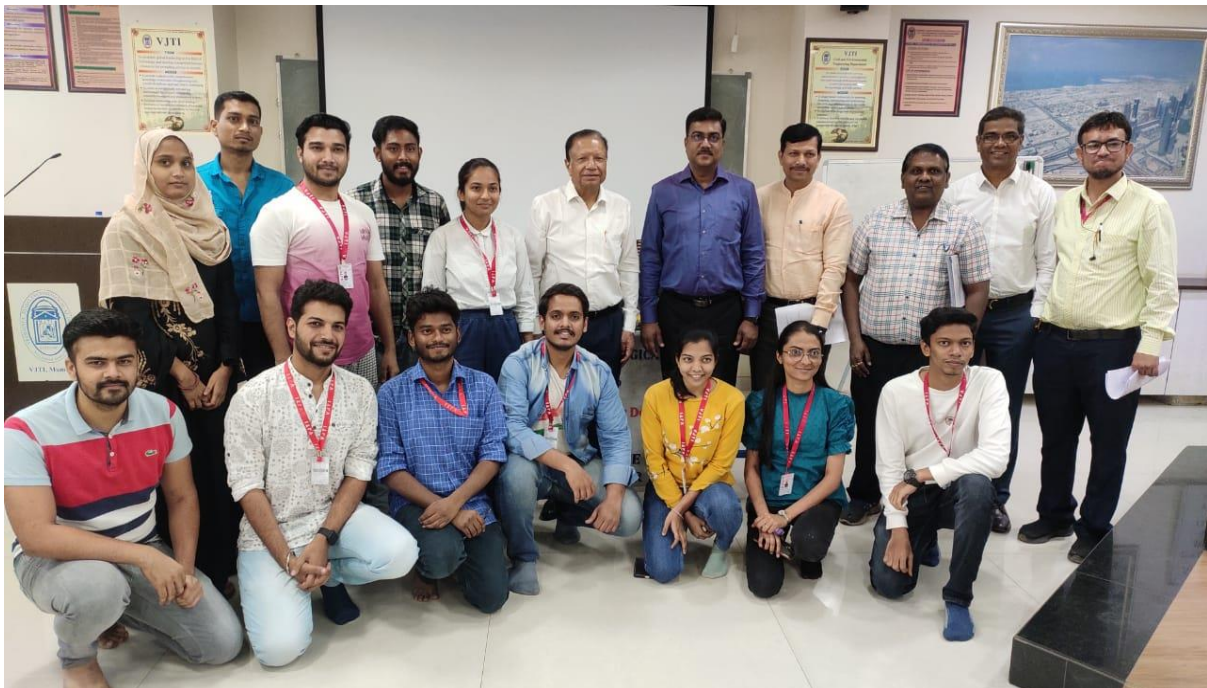
- Cementitious storage bins and silos
- Aggregate stockpile
- Water tank
- Chilling Plant and Ice Plant
- Batching unit and concrete mixer

Mr. Manish Mokal explain about how production of concrete is done and how the supply should be done. In which they have covered following points:

- Grade of concrete
- Availability of right quality of raw material
- Volume of concrete required in one pour
- Chilling Plant & Ice Plant requirement
- Travel time from RMC Plant to Site
- Probable production hours
- No. of Transit Mixers required
- Concrete pumps / Placer booms required
- Testing facilities & Lab technicians

Also he explained about proper practices to store aggregates and admixture, Water requirement in concrete and volume of concrete required in one pour, special requirements in it. He explained about workability requirement, durability of concrete, Measures to be taken before start of concrete production, how to control temperature of concrete mix etc.

Mokal sir explained pumping of concrete in detail, how concrete is pumped, what are the difficulties faced during pumping, how they can be solved. Also explained about how the curing should be done on site and its proper techniques. Finally, the session got concluded with Question and Answer session.



A group photo after expert lecture with few interested students of B. Tech Civil , M. Tech Construction Management and M. Tech Environmental engineering.