



SANDIP FOUNDATION'S
Sandip Institute of Engineering and Management, Nashik
Department of Civil Engineering
Academic Year 2019-20
Report on Educational Visit

- **Event Title:** Educational Visit of SE Civil Students at RMC Plant of subject Concrete Technology.
- **Event Conduction Duration:** One day
- **Event Venue:** Penta Concrete Plant, Shinde Palse, Sinnar, Nashik
- **Name of Event Co-ordinator:** Prof. H. S. Patil
- **Event Details:**

Subject:- Concrete Technology

Day & Date of Visit: Saturday 07/03/2020

Class: SE Civil Students all Division

Topic Covered: Ready mix concrete , concrete mix design

Objectives:

1. Its main objective is to get knowledge about the RMC (Ready Mix Concrete) technology.
2. To get the Knowledge of concrete mix design for different structures.
3. To study Materials required for Ready mix Concrete Work.
4. To get the knowledge of admixtures and filler materials used as per requirement.

Event Summary:

Batch plants combine a precise amount of gravel, sand, water and cement together by weight (as per mix design formulation for grade of concrete recommended by the Structural consultant), allowing specialty concrete mixtures to be developed and implemented on construction sites.

Ready-mix concrete is often used over other materials due to the cost and wide range of uses in building, particularly in large projects like high rise buildings and bridges. It has a long life span when compared to other products of a similar use, like road ways.

Ready-mix concrete, or RMC as it's also known, refers to concrete that is specifically batched or manufactured for customers' construction projects, and supplied to the customer on site as a single product. It is a mixture of Portland or other cements, water and aggregates: sand, gravel, or crushed stone. All aggregates should be of a washed type material with limited amounts of fines or dirt and clay. An admixture is also added to improve work-ability of the concrete and/or increase setting time of concrete (using retarders) to factor in the time required for the transit mixer to reach the site/ place of casting.

Ready-mixed concrete is used in construction projects where the construction site is not willing, or not able, to mix concrete on site. Using ready-mixed concrete means product is delivered finished, on demand, in the specific quantity required, to the specific mix design required. For a small to medium project, the cost and time of hiring mixing equipment, labour, plus purchase and storage for the ingredients of concrete, added to environmental concerns (cement dust is a particular airborne health hazard and nuisance) may simply be not worth it when compared to the linear cost

model of ready-mixed concrete, where the customer pays for what they use, and lets someone else do the work up to that point. For a large project, outsourcing concrete production to ready-mixed concrete suppliers means delegating the quality control and testing, material logistics and supply chain issues, and mix design, to specialists who are already set up for those tasks, trading off against introducing another contracted external supplier who needs to make a profit, and losing the control and immediacy of on-site mixing.

Ready-mixed concrete can be transported and placed at site using a number of methods. The most common, and simplest, is the chute fitted to the back of transit mixer trucks (as in picture), which is suitable for placing concrete near locations where a truck can just reverse in. Dumper trucks, crane hoppers, truck-mounted conveyors, and, wheelbarrows, can be used to place concrete from trucks where access is not direct. Some concrete mixes are suitable for pumping with a concrete pump.

Materials required for RMC

ADMIXTURES :The result of interbreeding between two or more previously isolated populations within a species.

AGGREGATE: Inert particles (i.e. Gravel, sand, and stone) added to cement and water to form concrete.

CEMENT: Dry powder that reacts chemically with water to bind the particles of aggregate, forming concrete. Portland cement is typically used in concrete production.

FLY ASH : Fly ash is a by-product from coal-fired electricity generating power plants

MERITS OF RMC

1. The concrete mixed is used with high versatility. It is placed by following best concrete placing methods.
2. Cement is saved and the dust caused is reduced as ready mix concrete make use of bulk concrete instead of bags of cement.
3. Cement saving will conserve the energy and the resources.
4. Time required is greatly reduced
5. Noise and dust pollution at site is reduced.
6. Organization at site is more streamlined.
7. Durable & Affordable
8. Less consumption result in less production of cement hence less environmental pollution.
9. More durable structure is obtained thus increasing the service life and saving the life cycle costs.
10. Ready mix concrete manufacture have less dependency on human labours hence the chances of human errors is reduced. This will also reduce the dependency on intensive labours.
11. Small or large quantities of concrete as per the specification is delivered timely at the site.
12. Petrol and diesel consumed is less thus noise and air pollution is reduced. 1. Better quality concrete is produced.

DEMERITS OF RMC

1. Requires huge initial investment.
2. Not suitable for small projects (less quantity of concrete is required).
3. Need an effective transportation system from the batching plant to the job site.
4. Labour should be ready at the site to cast the concrete in position without any delay to avoid slumps in the mixture.
5. Concrete has limited time and should be used within 210 minutes of batching the plant. Traffic jam or breakdown of the vehicle can create a problem.
6. Need huge initial investment.
7. Not affordable for small projects (small quantity of concrete)
8. Needs effective transportation system from R.M.C to site
9. Traffic jam or failure of vehicle creates problem if proper dose of retarder is not given.

10. Labours should be ready on site to cast the concrete in position to vibrate it and compact it.

Outcome:

After completion of visit we came to know following details:

1. We got to know the concept RMC (Ready Mix Concrete) technology.
2. Got the information about benefits and application of RMC in construction industry
3. We got to know about the software used for the RMC plant.

Event photos:

