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A Brief Study of Ready-Mix Concrete: Features & Uses in Construction on the Context of Bangladesh

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Abstract : *When concrete is mixed readily in the plant rather than mixing it on the site and transported readily in the site by transit mixer in fresh state, it is called ready mix concrete, Ready-Mix concrete technology is a new trend in Bangladesh. So from engineering point of view it seems to be very important to obtain knowledge of the manufacturing process and the quality control technique of Ready-Mix Concrete to produce quality concrete in Bangladesh. Keeping this in mind, thorough study was made on different Ready-Mix Concrete producing companies and some consumers of Ready-Mix Concrete in Bangladesh. The objective of the research is to study and knows about the Ready-Mix Concrete (RMC) in the context of Bangladesh.*

Keywords : *Concrete technology, Ready mix concrete, Travel time, Transit mixer*

I. INTRODUCTION

Ready-Mix Concrete is a type of concrete that is manufactured in a factory or batching plant, according to a set recipe, and then delivered to a worksite, by truck mounted transit mixers. This results in a precise mixture, allowing specialty concrete mixtures to be developed and implemented on construction sites. The first ready-mix factory was built in the 1930s, but the industry did not begin to expand significantly until the 1960s, and it has continued to grow since then.

Ready Mixed Concrete, or RMC as it is popularly called, refers to concrete that is specifically manufactured for delivery to the customer's construction site in a freshly mixed and plastic or unhardened state. Concrete itself is a mixture of Portland cement, water and aggregates comprising sand and gravel or crushed stone in traditional work sites, each of these materials is procured separately and mixed in specified proportions at site to make concrete. Ready-Mix Concrete is bought and sold by volume-usually expressed in cubic meters RMC can be custom-made to suit different applications.

Ready Mixed Concrete is manufactured under computer-controlled operations and transported and placed at site using sophisticated equipment and methods. RMC assures its customers numerous benefits.

The growth of RMC is predominantly driven by demand from the metro cites in cities like Dhaka. RMC is particularly used when building activity is located in congested sites where small space is available for sitting the mixer and for stock piling of aggregates and for the construction of high rise building.

The investigation studies the recent trend, use of Ready-Mix Concrete, different manufacturing companies, a thorough survey on these companies, lab reports showing the comparison of strength gain of various companies and consumers of Ready-Mix Concrete in Bangladesh as well as presents the cost comparison between various Ready-Mix Concrete manufacturer companies of different compressive strength of concrete.

II. PRELIMINARY SURVEY ON SOME RMC FACTORIES

In Bangladesh, concord is the pioneer company, introducing Ready-Mix concrete technology concord first established its Ready-Mix concrete factory in Dhaka city in 1991 with one batching plant, three transit mixers and one concrete pump since then the evolution of this factory is going on and now it has become a big industry with other company joining the trend and contributing to the environment process taking place at a rapid speed.

The Ready-Mix concrete producing companies in Bangladesh are as follows:

- Concord Ready-Mix & Concrete Products Ltd.
- MIR concrete products Ltd.
- Advanced Development & Technology Ltd.
- Bashundhara Technology Ltd
- ABC Ltd.
- GBB (Gulbox Bhuiyan Ltd).
- Abdul Monem Ltd.

- Navana RMC
- Amin Mohammad Foundation
- Bestec Ltd.
- BDCL.

Concord, Mir Advanced, ABC, Navana, Bestec produce Ready-Mixconcrete for commercial purposes and Bashundara, GBB, Abdul Monem, Amin Mohammad produces Ready-Mix Concrete for their own purposes.This study has completed on the basis of the information gathered by visiting several companies.

1. Production in each month:

Company	Production (cft/month)
Concord Company	200,000
Navana Group	150,000
Abul Monem Group	75,000
Shah cement	200,000 (expected)
GBB ltd.	25,000

2. Compressive strength ranges:

Company	Compressive strength(psi)
Concord Company	2000-5500
Navana Group	3000-5000
Abul Monem Group	2000-6000
Shah cement	3500-5000
GBB ltd.	3000-5500

3. No. of transit mixer:

Company	no.	Capacity (m^3)	Time required for loading (min)
Concord Company	25	6	15
Navana Group	12	6	8
Abul Monem Group	10	3-7 7-6	12
Shah cement	20	5	7
GBB ltd.	4	6	20

4. No. of batching plant:

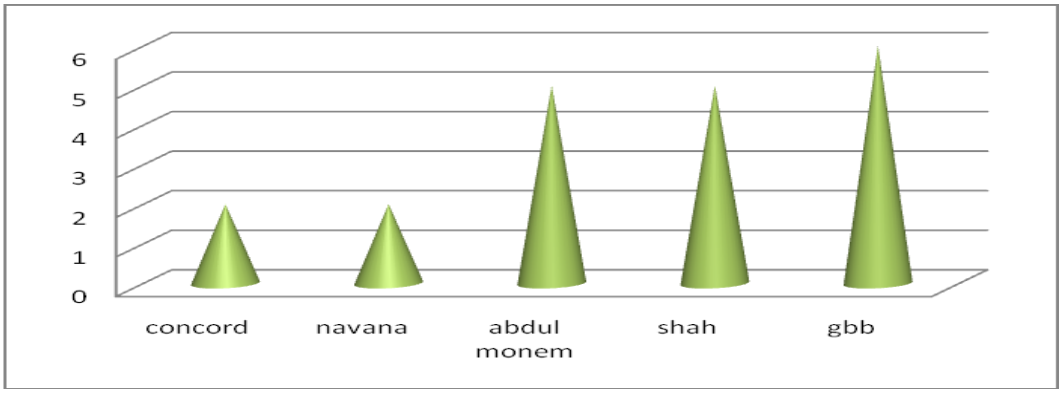
Company	no.	Capacity (m^3)
Concord Company	3 in Dhaka 1 in Chittagong	30
Navana Group	1	50
Abul Monem Group	1	36
Shah cement	1	56
GBB ltd.	1	18

5. RPM of transit mixer at various conditions:

Company	Loading	Travelling	Unloading
Concord Company	14	1-3	5-6
Navana Group	8-10	3	8-10
Abul Monem Group	4	3	4
Shah cement	14	14	20

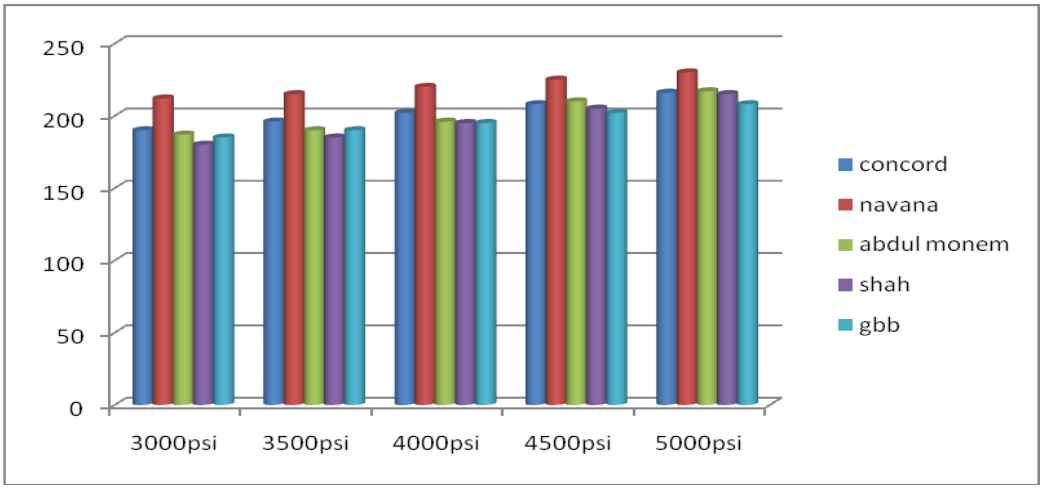
6. Maximum travel time:

Company	Maximun travel time (hr)
Concord Company	2
Navana Group	2
Abul Monem Group	5
Shah cement	5
GBB ltd.	6



7. Cost of ready mix concrete of different strength:

Company	3000psi	3500psi	4000psi	4500psi	5000psi	5500psi
Concord Company	190	196	202			
Navana Group	212	215	220	225	230	
Abul Monem Group	187	190	196	210	217	222
Shah cement		185	195	205	215	
GBB ltd.	165	190	195	202	208	212



III. CONCLUSION

In general, the use of Ready mix concrete is beneficial to users from all angles: better quality, higher speed, better durability and savings in labor etc. It also eliminates of material procurement requirements and storage hassles. Concrete produced by RMC (Ready Mix Concrete) can certainly be considered to be eco-friendly because wastages are reduced drastically. Besides the process of site mix concrete is manual and non standardized and hence prone to human error. In Bangladesh still now most of the casting is done by conventional concreting. The growth of Ready-Mix Concrete industry should be increased and should strictly follow the code of specification to deliver better concrete to the consumer and made satisfied.

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