

Final term Paper
(summer)

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Q No of

Compare internal and external vibration of concrete?

Ans

Internal vibration of concrete.

* This is one of the most common and promising method used for concrete vibration.

* The diameter (20-180mm) and length (25-90mm) of the head of vibrator varies according to the requirement at the site.

* internal vibrators are used for cast in place pours. but there are exception where reinforcement is very intense.

* Internal vibration is vibrating the concrete from within the form work.

* The frequency range adopted is normally 3500 to 5000 rpm.

* The vibrator head is immersed in the wet concrete.

* If there are re-bars in the floor, internal vibrators are useful in helping consolidate the concrete against the steel.

* The reason for use of this is because the main work of the so-called vibrator head is carried out inside the concrete. The vibrator head is kept in the freshly mixed (green) concrete in order to consolidate the concrete.

* Also, in any slab that is 8 inches thick or more internal vibrator should always be used so that the full thickness becomes uniformly consolidated.

External vibration of concrete.

* The external vibrator beats the pneumatic vibrator by miles on construction sites.

* External vibrator is less effective and it consumes more power compared to the internal vibration.

* This is adopted where internal vibration can't be used due to either thin sections or heavy reinforcement.

* There are a ~~number~~ ^{vibrators} ~~types~~ attach via a bracket or clamp system to the concrete forms.

* There are a wide variety of external concrete vibrator available and some vibrator manufacture have bracket or clamp system designed to fit the major brands of concrete form.

* One of the reasons for cautioning against the use of internal is concern over Segregation and the possibility that this may happen if workers use internal vibrator to move Piles of concrete into Position.

* The work with external vibrator is both economically and technically a better solution. They require less maintenance, have less down time and qualitatively provide better result.

★ External concrete vibrators are available in hydraulic, pneumatic or electric power.

★ The formwork also has to be made extra strong when external vibration is used.

★ They also have a lower energy consumption as they can be immediately put into operation after being switched on and a stand-by operation is not required.

Q No 02

What are the advantage and disadvantage of using ready mixed concrete ?

Ans:

Ready mixed concrete is mixed offsite to a client's exact specifications, and is then delivered to the site where it is needed.

The primary advantages of using ready mix ready concrete include:

- * a high quality product lower costs.
- * An eco-friendly process
- * Saving time for your business.

Advantage of using ready mix concrete :

High Quality Product:

The construction industry is built on using the most robust, high quality materials when it comes to concrete, it is important to balance the water-cement ratio perfectly, and also to make sure the aggregates used are properly graded.

Lowers costs:

it's the aim of any project to save the pennies, and that's where ready mix

can help instead of individually purchasing each raw material separately! going down the route of ready mix means.

Saves Time;

Time is of the essence in the construction world. Choosing a ready mixed option can avoid delays caused by erecting and dismantling any on-site mixing equipment.

Eco-Friendly Process;

Any type of concrete is an eco-friendly option, thanks to the readily-available nature of the key components.

Also using Ready mix concrete gives.

- * No compelling reason to store development materials at the site
- * Work related with the creation of cement is wiped out, accordingly lessening work cost.
- * Air and Noise contamination at the place of work is diminished
- * Wastage of fundamental materials at the site is kept away from.
- * Lessen the time required for development.

- ★ No deferrets in finishing significant activities clams, streets, spans, burrows and so on.
- ★ Economy in the utilization of crude materials bring about protection of characteristic assets.
- ★ Consistent quality
- ★ Faster speed of construction
- ★ Less requirement of monitoring
- ★ Saving on labor employment
- ★ Less wastage

Disadvantages of using read mix concrete.

Following are the disadvantage of ready - mix concrete.

- ★ Requires huge initial investment
- ★ Not suitable for small project (less quantity of concrete is required)
- ★ Need an effective transportation system from the batching plant to the job site.
- ★ Labour should be ready at the cast the concrete in position without any delay to avoid slumps in the mixture.

* 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.

* The materials are batched at a central plant, and the mixing begins at that very plant. So the travelling time from the plant to the site is critical over longer distance. Some sites are just too far away, which can risk that ready mix concrete may become unusable due to setting.

* It will generate additional road traffic. Generally, Ready Mix Trucks are large in size and may cover lot of area in the road blocking other traffic.

* Concrete's limited time span between mixing and curing means that ready-mix should be placed within 210 minutes of batching at the plant. Modern admixtures can modify that time span precisely, however the amount and type of admixture added to the mix is very important.

* The transit time from the time of preparation of concrete to the delivery site, will result in loss of workability. This will demand for additional water or admixtures to maintain the workability as per the specification. At site, the QA/QC engineer is supposed to check the workability through slump test before using it for construction.

* Traffic during the transit of concrete can result in setting of concrete. This will hence require addition of admixtures to delay the setting period. But unexpected traffic is a greater problem.

* The formwork and placing arrangement must be prepared in advance in large area as the concrete can be bought in larger amount.

Q No 03

What are the non-destructive testing methods?

Ans

Non - Destructive Testing

NDT stands for Non - Destructive Testing. It refers to an array of inspection methods that allow inspectors to evaluate and collect data about a material, system, or component without permanently altering it.

Non destructive testing is the life blood of a well-run facility. NDT techniques and repeatable results depend on highly trained technicians with experience and integrity. Industrial NDT method and interpretation of result are performed by certified professionals.

Methods of Non - Destructive Testing

Here are the eight most commonly used NDT techniques.

1 : Visual Testing (VT) :

Destructive Testing is the act of collecting visual data on the status of a material. Visual Testing is the most basic way to examine a materials or object without altering it in any way.

2 ULTRASONIC TESTING :

~~Destructive~~ Ultrasonic Non-destructive Testing is the process of transmitting high-frequency sound waves into a material in order to identify changes in the material's properties.

3 Radiography Testing (RT) :

Destructive Testing is the act of using gamma - or - X - radiation on materials to identify imperfection.

4 Eddy current (Electromagnetic) Testing :

Eddy current Non-Destructive Testing is a types of electromagnetic testing that uses measurements of the strength of electrical current (also called eddy current) in

a magnetic field surrounding a material in order to make determinations about the materials, which may include the locations of defects.

(5) Magnetic Particle Testing (MT):

Magnetic Particle Non-Destructive Testing is the act of identifying imperfection in a material by examining disruption in the flow of the magnetic field within the material.

(6) Acoustic Emission Testing (AE):

Acoustic Emission Non-destructive Testing is the act of using acoustic emission to identify possible defects and imperfections in a material.

7 Leak Testing (LT)

Leak Non-Destructive Testing refers to the process of studying leaks in a vessel or structure in order to identify defects in it. Inspector can detect leaks within a vessel using measurements taken with a pressure gauge, Soap-bubble

test , or electronic listening devices , among other .

⑧ Liquid Penetrant Testing (PT)

Non-destructive Liquid Penetrant Testing refers to the process of using a liquid to coat a material and then looking for breaks in the liquid to identify imperfections in the material.

