Compaction of Concrete
Why Vibration of Concrete Required

To reduce the air contained in the concrete. Generally, 5%-8% of voids from total volume contains in the concrete mix. With the vibration, it reduces significantly.

To consolidate concrete adequately.

To avoid segregation

To avoid bleeding
Concrete Vibration Methods

Form Vibration
Surface Vibration
Internal Vibration
Rebar Vibration
Concrete Vibrating Table
Form Vibration

Vibration of formwork will be done
Mostly used when other methods are not applicable
Vibrator fixed into the formwork
Make sure the adequacy

Precast element concreting
Tunnel Concreting
In large concreting work
Surface Vibration

Vibrating will be done through the concrete surface
Not applicable for thick concrete 150-250mm
Limited depth can only vibrate
Adequate density or hardness is required to vibrate
Internal Vibration

The most popular method used in construction
It is a simple method and easy to handle
Call as porker vibrator
Rebar Shaker

Used in special occasions
Use when other methods are not applicable
Vibration of rebar will be done
Can not be used for large pours
Concrete Vibrating Table

- Used to vibrate the concrete
- Suitable for small concrete
- Used in precast construction
The concrete could be vibrated about 10s-15s. The skill of the operator is very important.

Overlap the previous circle with the new circle every time. In addition, the layers shall also vibrate manner that they are overlapped. The porker vibrator shall at least be inserted 150mm into the previous layer.

Vibration could be stopped when the entrapped air no longer escaped and the surface is leveled.

Pulling out the porker vibrator could be done not more than 75mm per second. The ideal speed of pulling out the porker vibrator is 25mm per second.

The vibrator shall not be used to move the concrete to the correct place.
Improper Vibration Issues

Having entrapped air in the concrete increase the voids. It reduced the density of the concrete. It increases the porosity of the concrete.

As a result, concrete permeability increases. It could affect the durability of concrete. In addition, it could lead to the corrosion of reinforcement.

Further, high porous concrete could be carbonated, and as a result reinforcement corrosion could be an issue.

Higher voids in the concrete make lesser the strength of the concrete.

Formation of the Honeycombs especially in areas with reinforcement conjectures

Sand streaking caused by the heavy bleeding and mortar loss

The appearance of Placement Lines

Cold Joints in the concrete

Subsidence Cracking
Thank you

Structural Guide
Civil & Structural Engineering Knowledge Base