SELF COMPACTING CONCRETE & CONCRETING CHALLENGES

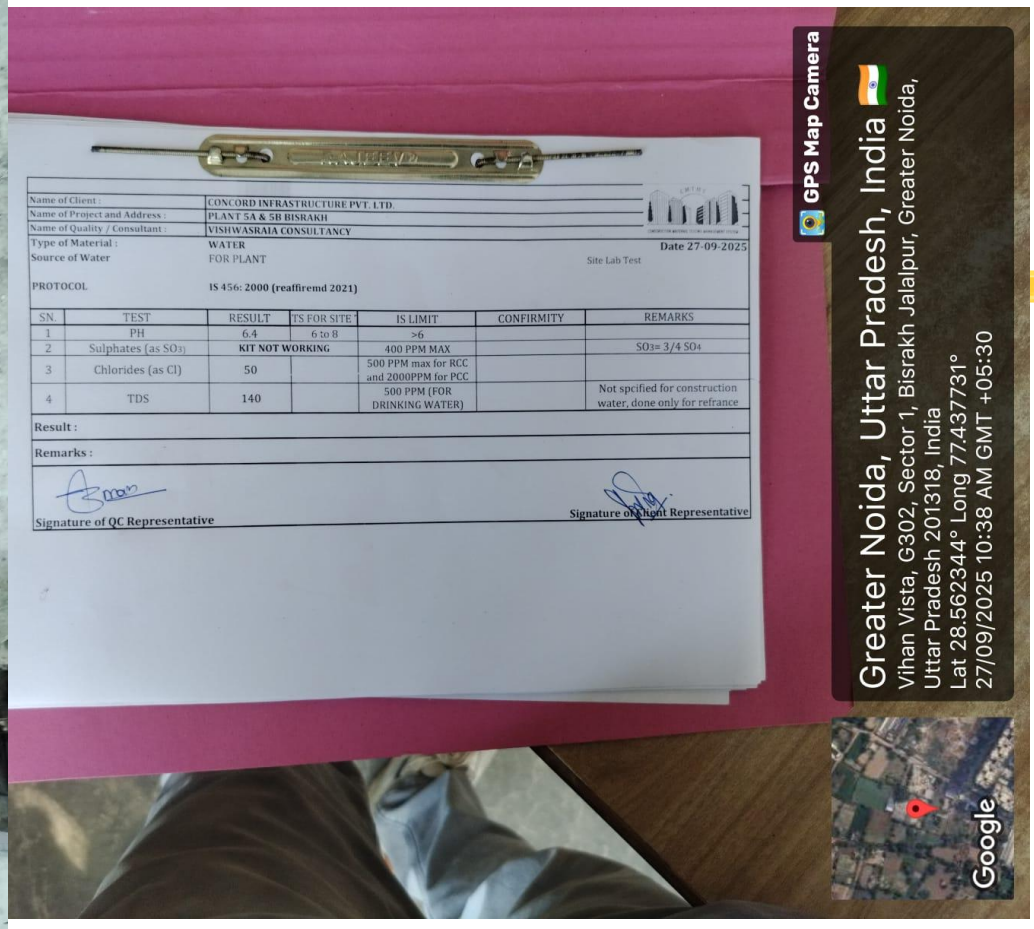
OUT LINE OF THE PRESENTATION

1. SELF COMPACTING CONCRETE (SCC)
2. CONSTRUCTION JOINT
3. FORMWORK RELEASE AGENTS
4. PIPE LINE SLURRY COLLECTION AND DISPOSAL
5. PUMPING
6. PLACING AND FINISHING
7. PRECAUTIONS

SCC

IMMEDIATELY

AFTER 15 MINUTES



Name of Client :	CONCORD INFRASTRUCTURE PVT. LTD.
Name of Project and Address :	PLANT 5A & 5B BISRAKH
Name of Quality / Consultant :	VISHWASRAIA CONSULTANCY
Type of Material :	WATER
Source of Water	FOR PLANT

Date 27-09-2025

Site Lab Test

PROTOCOL — IS 456: 2000 (reaffiremd 2021)

SN.	TEST	RESULT	TS FOR SITE	IS LIMIT	CONFIRMITY	REMARKS
1	PH	6.4	6 to 8	>6		
2	Sulphates (as SO_3)	KIT NOT WORKING		400 PPM MAX		SO_3= 3/4 SO_4
3	Chlorides (as Cl)	50		500 PPM max for RCC and 2000PPM for PCC		
4	TDS	140		500 PPM (FOR DRINKING WATER)		Not spcified for construction water, done only for refrance

Result :

Remarks :

Signature of QC Representative

Signature of Client Representative


GPS Map Camera
Greater Noida, Uttar Pradesh, India
Hc7q+668, Sector 1, Bisrakh Jalalpur, Greater Noida, Uttar Pradesh 201318, India
Lat 28.562705° Long 77.437538°
27/09/2025 10:36 AM GMT +05:30
Google

TAKE AWAY

I. IDENTIFICATION OF CONCRETABLE SCC

II. Cube in shade and covered with moist haisen clothes

III. Water used for curing at plant and site and RMC plant is tested and ok

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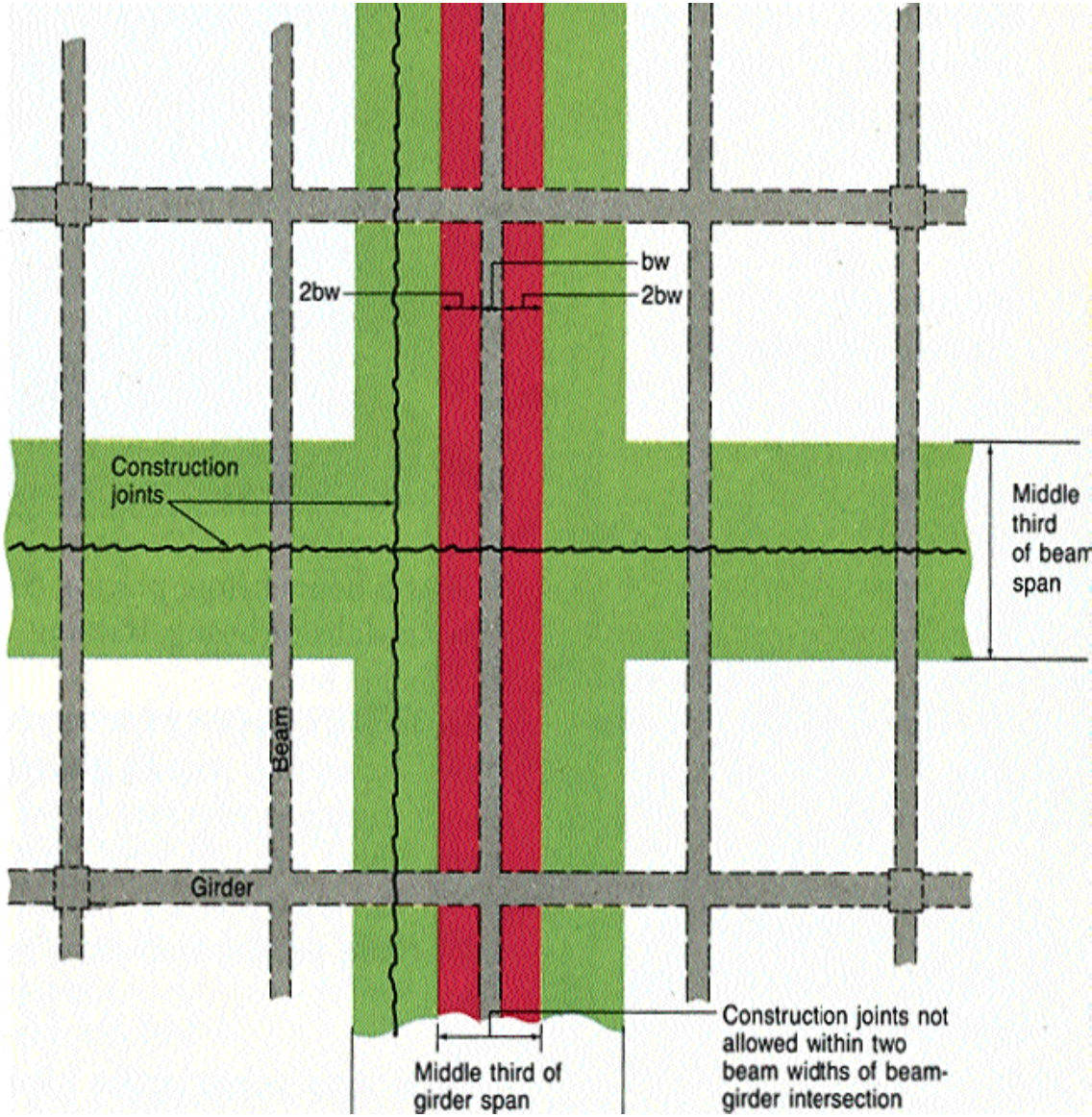
Effect of construction joint on strength

- In a region where the shear is significant, a construction joint with a smooth surface reduces the shear strength of the member by 40%.
- But a beam having a joint with a roughened surface has a failure mode and ultimate load similar to an un jointed beam.

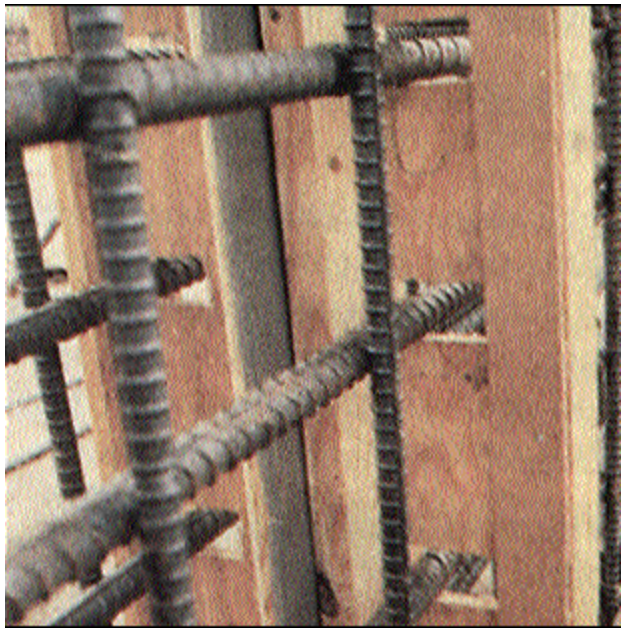
Location of construction joint in slab and beam

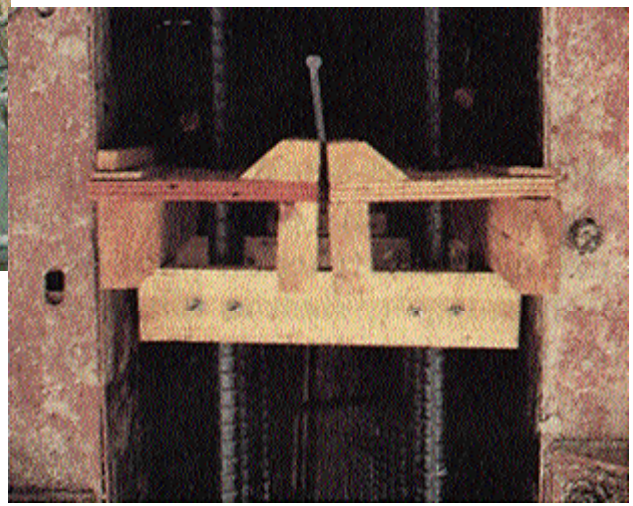
- Joints must be placed perpendicular to the main reinforcement
- Shear forces are minimum or at a point of contraflexure.
- Construction joints in floors shall be located within the middle third of spans of slabs and beams.
- Joints in beam shall be offset a minimum distance of two times the width of intersecting beams”



How to form construction joint in slab and beam

- Wood members are notched or a gap is left in the plane of the rebar. Leaving a gap allows each bulkhead board to be positioned and removed without putting pressure on the bar.





- Casting till bottom of slab with wall/ column grade of SCC concrete
- Above that normal slab concrete

Location of construction joint in wall and column

- Locate construction joints in walls and columns on the underside of floor slabs, beams and at the tops of footings.

- Horizontal construction joints in walls and columns are generally spaced one story apart.

Construction joint surface preparation

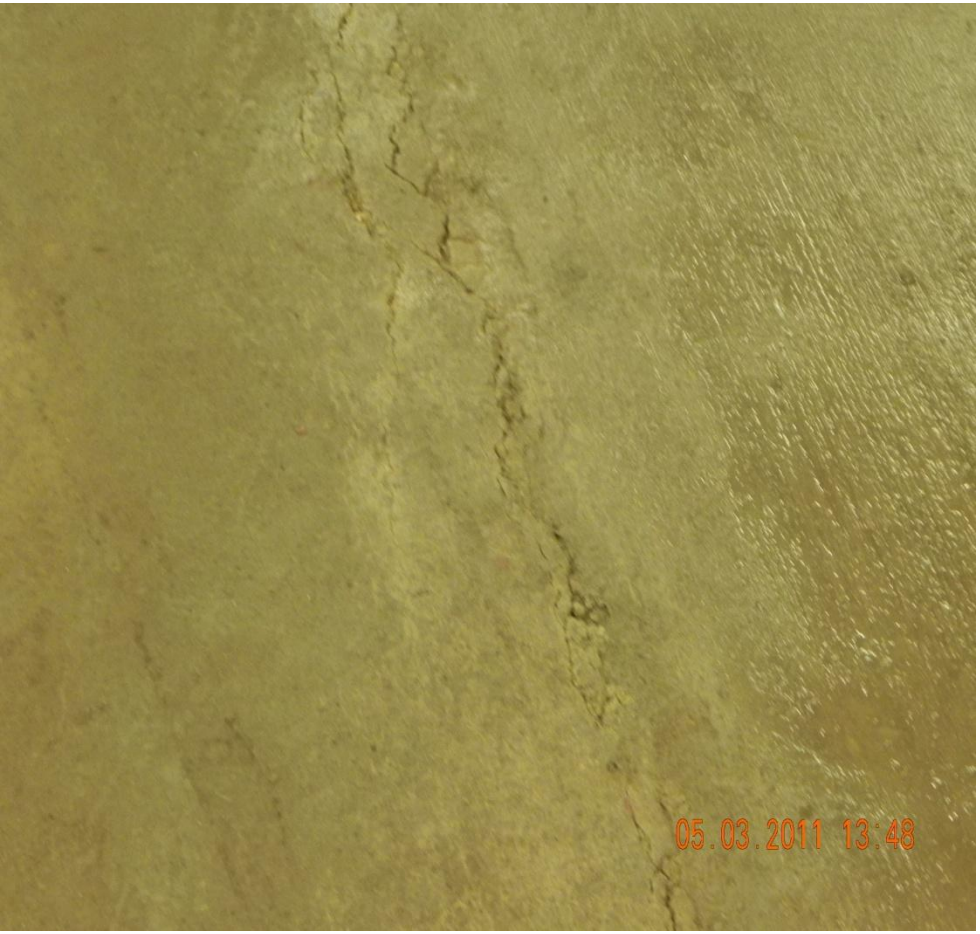
- Surface of concrete construction joints shall be cleaned and laitance removed.
- Use stiff wire brushes, scrubbers, or sand blasters to clean surfaces and remove laitance.
- Immediately before new concrete is placed, all construction joints shall be wetted and standing water removed.
- Apply a neat cement slurry/bonding agent to vertical Construction joint surfaces.
- Fresh concrete should be thoroughly vibrated near construction joints so that mortar from the new concrete flows between large aggregates and develop proper bond with old concrete.
- Where high shear resistance is required at the construction joints, shear keys may be-provided.

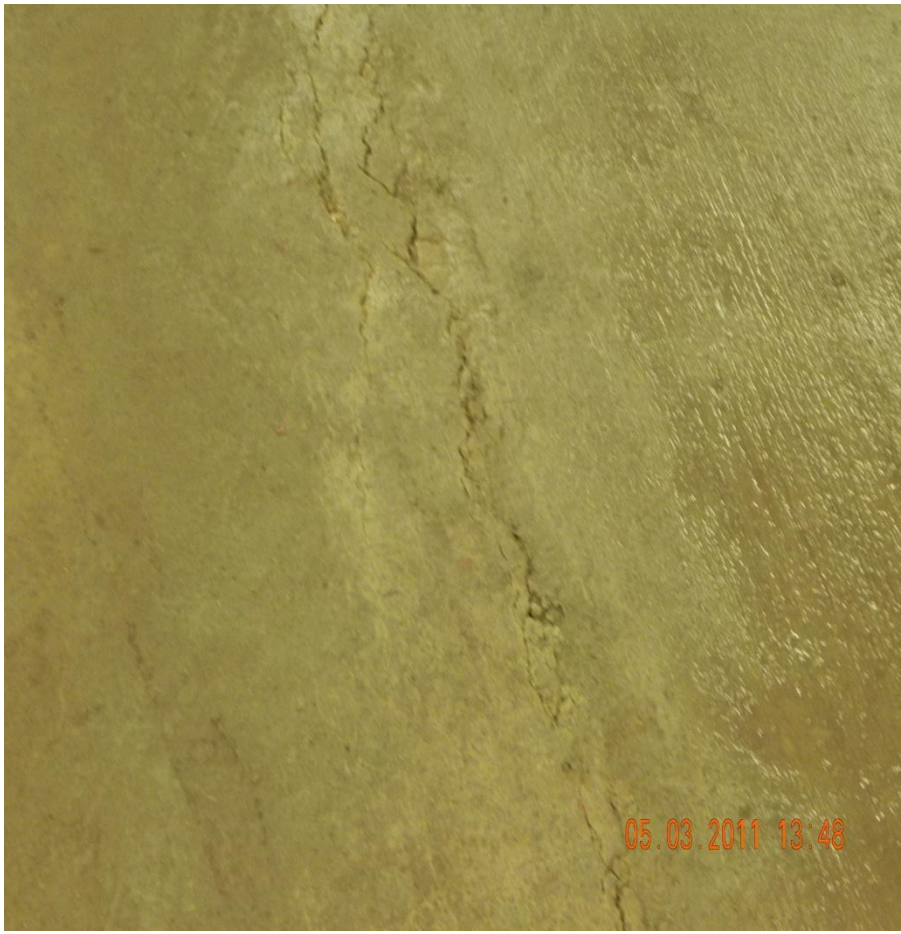
CONSTRUCTION JOINT

All opening/ gap must be filled properly

Concrete moved away it must be clean immedaitely

Improper Construction Joint





TAKE AWAY

- Construction Joints must be at the central span/3
- In Vertical Member it is horizontal
- In horizontal member it should be vertical
- Concrete must not be allowed to move from Joint
- Surface must be prepare and cleaned before next pour

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FORMWORK RELEASE AGENTS

- SCC normally produces a very high quality finish giving a mirror copy of the formwork

- Excess release agent at the form face and concrete interface can result in staining, retention of air bubbles and other imperfections.
- Vegetable, mineral or water based mould release agents need to be applied extremely thinly, almost to the point that they are just wiped on with a cloth or paint roller. It is also imperative that the mould release agents have not been diluted or adulterated in any way.
- Self-compacting concrete will normally allow entrapped air to escape between the concrete and the formwork. Consequently, the release agent must also be of a type which will allow air to migrate in a controlled manner and escape from the concrete.

FORMWORK RELEASE AGENTS

- Certain release agents, when used in combination with impermeable formwork, are too viscous to allow air to escape effectively and this can result in air voids adhering to the surface of the formwork, resulting in blowholes in the concrete.

TAKE AWAY

- Releasing agent must be applied thin and uniform
- On shuttering after cleaning of surface
- Quality of shuttering oil must be properly selected

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PIPE LINE SLURRY COLLECTION AND DISPOSAL

TAKE AWAY

- Too avoid deposition of slurry on slab or vertical

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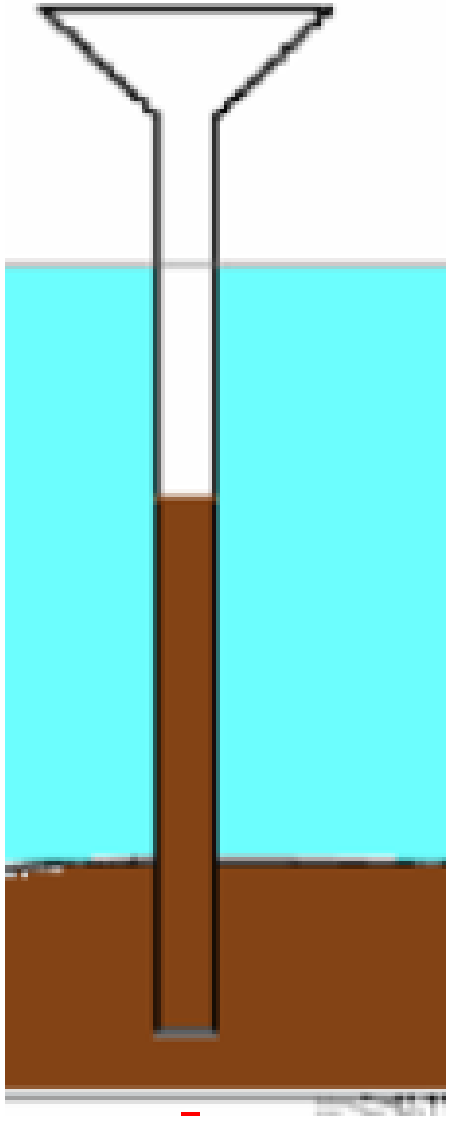
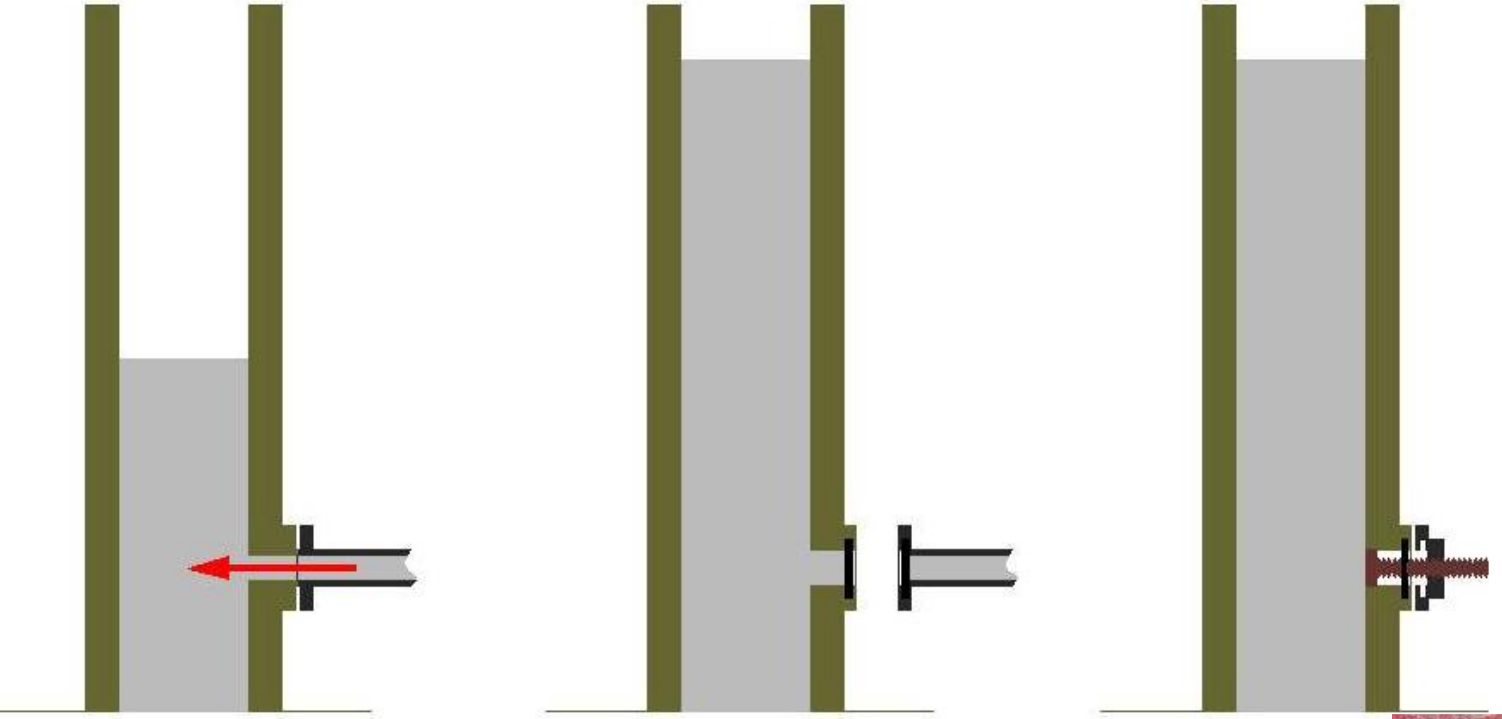
PUMPING

PUMPING

- The pumping point should be in the middle of the wall, thus minimizing the horizontal length of flow. The horizontal spacing of the pumping points will depend on the reinforcement and the flow capacity of the SCC and has to be agreed with the concrete supplier.
- When pumping from the top, and when surface finish needs to be optimised, SCC should be placed with a submerged hose in order to minimise the possibility of entrapped air. Casting should start at the lowest part of the form, and at a place where the pumping hose can be located as close as possible to the bottom of the form. As soon as sufficient depth has built up, the hose should then be submerged into the concrete. The end of the pump hose should, if possible, be maintained below the concrete surface at all times, including when changing its location so that air is never allowed into the hose.



Formwork for pumping bottom up



TAKE AWAY

- Pouring Point Selection
- Avoiding entrapped air

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Placing and finishing on site

- During placing, the concrete should be regularly checked to ensure that coarse aggregate is remaining at or very near the surface and that there is no indication of segregation.
- There should not be excessive release of large air bubbles that would suggest air is being entrapped by the placing process
- Check formwork for signs of leakage
- Look for top surface laitance, a non-uniform surface colour, specific areas where air is being trapped and any other unwanted effects that are visible.

Wrong Placing of Concrete

Mortar Sticks to the reinforcement and aggregates only fall below

CONCRETING

Collection of concrete

Tamping

Pocking if SCC is delayed by more than 2 Hrs

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Precautions

1. Use SCC in vertical Members and normal concrete in horizontal members. Construction joints properly made vertical in slab and beam, any gaps must be filled with thermocol or POP.
2. Advisable to fill SCC upto bottom of slab for better quality
3. Collect slurry in drum and dispose it through pipe, in no case slurry will be allowed to through on shuttering where casting has to be done.
4. When shifting of line is done, collect the concrete on jute bags, do not allow these concrete to fall on shuttering
5. Do the concreting from the centre of the section
6. Ensure tapping with wooden mallet on wall shuttering
7. If concrete is moved away from the construction joints it must be cleaned immediately, in no case horizontal layer of concrete is allowed in horizontal member like beam/ slab

Precautions

8. If any repairing is required it must be done with polymer modified mortar or micro concrete of grade not less than the grade of concrete of member follow the SOP provided for it.

9. The holes of tier rod must be completely filled with polymer modified mortar after complete removal of sleeves immediately after deshuttering before going to next floor.

Thanks