MEGA LABOURERS SERVICES LTD. (RC 763713)
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SOP DOCUMENT

Concrete Pouring Standard SOP

A practical standard operating procedure for concrete placement, compaction, finishing, curing, inspection and quality records on Nigerian construction projects

Prepared for the Mega Labourers Services Ltd Resource Centre

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Executive Summary

Concrete pouring is a controlled engineering operation, not merely the act of discharging ready-mixed concrete into formwork. A safe and durable pour depends on verified formwork, confirmed reinforcement, coordinated embedded items, approved mix design, workable access, adequate labour, tested equipment, competent supervision, clear communication, planned compaction, timely finishing and continuous curing. This Standard Operating Procedure gives Mega Labourers Services Ltd a practical field document for planning, conducting and recording concrete pours on building, civil, road, drainage, industrial and facility projects in Nigeria.

The procedure follows recognised international guidance for measuring, mixing, transporting, placing, curing and safely managing cast-in-place concrete. ACI guidance identifies concrete quality as a product of controlled materials handling, batching, mixing, transportation and placement, while OSHA rules for concrete and masonry construction emphasise the control of formwork, reinforcing steel, concrete buckets, pumping systems and worker exposure during concrete operations. The Nigerian Occupational Safety and Health Policy also places emphasis on safe workplace design, equipment, work processes, communication and accident prevention. This SOP translates those principles into a practical sequence for site teams.

This document should be used together with the approved project drawings, structural specifications, method statement, inspection and test plan, laboratory testing plan, risk assessment, permit-to-work requirements and client quality procedures. Where the project engineer, client specification, local authority or recognised standard requires a stricter control than this SOP, the stricter requirement shall apply.

1. Purpose

The purpose of this SOP is to define the minimum standard process for preparing, placing, compacting, finishing, curing, inspecting and documenting concrete works undertaken by or for Mega Labourers Services Ltd. It aims to reduce honeycombing, cold joints, segregation, excessive water addition, premature drying, unsafe access, formwork failure, uncontrolled pump pressure, untested concrete and poor record keeping. It also supports consistent communication between project managers, site engineers, supervisors, QA/QC personnel, safety officers, suppliers, pump operators and concrete finishers.

2. Scope

This SOP applies to cast-in-place concrete operations for foundations, ground beams, columns, walls, suspended slabs, ramps, staircases, road slabs, drains, kerbs, equipment bases, manholes, industrial floors and similar concrete elements. It applies whether concrete is delivered by ready-mix truck, mixed on site under approved controls, placed by pump, bucket, chute, wheelbarrow, dumper or other approved method. Specialist works such as post-tensioned concrete, mass concrete, underwater concrete, high-strength concrete, precast production and slip-forming require a supplementary project-specific method statement.

3. Reference Standards and Guidance

This SOP has been prepared as a practical company procedure and does not reproduce any proprietary standard. Project teams should consult the latest contractual and statutory requirements applicable to each job. The following references provide useful technical and safety guidance for the controls used in this SOP.

Reference	Relevance to this SOP
ACI PRC-304-00: Guide for Measuring, Mixing, Transporting, and Placing Concrete	Provides guidance on handling, measuring, batching, mixing, transporting and placing concrete. It supports the SOP controls on delivery, placement methods and avoidance of segregation.
ACI 305R-20: Guide to Hot Weather Concreting	Provides guidance for managing concrete under high temperature, low humidity, wind and solar exposure. This is important for Nigerian site conditions.
ACI 308R-16: Guide to External Curing of Concrete	Supports curing controls intended to prevent moisture loss and maintain favourable concrete temperature while strength and durability develop.
OSHA 29 CFR 1926 Subpart Q and 1926.703	Provides safety requirements and guidance for concrete and masonry construction, including formwork, reinforcing steel, buckets, pumping systems and formwork removal.
Nigeria Factories Act and National Occupational Safety and Health Policy	Provide Nigerian health and safety context for safe workplaces, equipment, work processes, communication, accident prevention and worker welfare.

4. Definitions

Term	Meaning
Pour Card	A formal pre-pour approval record confirming that drawings, formwork, reinforcement, embedded items, access, safety controls and concrete supply arrangements are ready.
ITP	Inspection and Test Plan, setting out hold points, inspections, tests, acceptance criteria and records for concrete work.
Slump Test	A field test used to assess concrete consistency and workability

	according to the project testing standard.
Cold Joint	A weakness or visible joint caused when fresh concrete is placed against concrete that has already begun to set before proper bonding occurs.
Honeycombing	Voids or exposed aggregate caused by poor compaction, obstruction, leakage, segregation or inadequate placement technique.
Curing	A controlled process for maintaining moisture and temperature conditions after placing concrete so that hydration and strength development can continue.

5. Roles and Responsibilities

Role	Responsibility Before and During Pour	Required Records
Project Manager	Approves the pour plan, confirms resources, coordinates client requirements and ensures that high-risk decisions are escalated.	Approved method statement, programme confirmation and resource plan.
Site Engineer	Checks drawings, levels, dimensions, reinforcement, cover, embedded items, access and pour sequence.	Pre-pour checklist, setting-out records and pour card.
QA/QC Engineer or Inspector	Verifies inspection points, monitors delivery tickets, sampling, tests, non-conformances and records.	ITP, cube/cylinder register, slump records, NCRs and pour report.
HSE Officer	Checks access, PPE, exclusion zones, pump line safety, lighting, emergency plan and toolbox briefing.	Risk assessment, toolbox attendance, inspection report and incident record if required.
Supervisor or Foreman	Controls workforce, placement sequence, vibrator use, housekeeping, communication and immediate corrective actions.	Daily allocation sheet and work observation notes.
Concrete Supplier	Supplies approved mix, delivery tickets, batch information and concrete that meets the specified grade and workability.	Delivery ticket, batch record and supplier test certificates where applicable.
Pump Operator	Operates pump safely, checks pipeline, controls pressure, coordinates with banksman and stops work if unsafe conditions occur.	Pump inspection record and operator competency evidence.

6. Required Documents Before Pour

No concrete pour should proceed until the core technical and safety documents have been reviewed and made available at site. The responsible site engineer should confirm that the latest revision of drawings and specifications has been issued for construction. The QA/QC representative should confirm that the ITP and testing requirements are understood.

The safety officer should confirm that the risk assessment, permit requirements, access plan and emergency arrangements are in place. The supervisor should confirm that labour, equipment, materials and communication arrangements are ready.

- Approved structural drawings and latest revision register.
- Approved concrete mix design, grade, slump or workability range and admixture requirements.
- Approved method statement and risk assessment for the pour.
- Inspection and Test Plan with hold points and acceptance criteria.
- Pre-pour checklist and signed pour card.
- Concrete delivery schedule and supplier contact details.
- Emergency contacts, first aid arrangements and nearest clinic or hospital information.

7. Pre-Pour Readiness Checks

Pre-pour readiness checks are the most important quality control stage because many defects cannot be corrected after concrete has been placed. The team should conduct the check early enough to allow correction of defects before the truck arrives. Late correction during concrete discharge encourages shortcuts and increases the risk of cold joints, poor compaction, unsafe movement and incomplete inspection. The responsible engineer should not permit the pour until all hold points are cleared.

Check Area	Minimum Requirement
Formwork and Shoring	Formwork must be complete, aligned, braced, supported, clean, leak-resistant and inspected by a competent person. Props and shores must not be removed or altered without approval.
Reinforcement	Bars must be correct in size, spacing, lap, anchorage, cleanliness and cover. Vertical reinforcement must be adequately supported against collapse.
Embedded Items	Anchor bolts, sleeves, conduits, inserts, waterstops, blockouts and MEP penetrations must be fixed to the approved location.
Surface Preparation	Sub-base, blinding, construction joint or previous concrete surface must be clean, damp where specified and free from debris, oil, standing water and loose material.
Access and Working Platforms	Safe access, walkways, scaffolds, ladders, edge protection and lighting must be in place before work starts.
Equipment	Pump, pipelines, vibrators, standby vibrator, finishing tools, curing materials, generator and lighting must be available and inspected.
Weather and Timing	Weather forecast, heat, rain, wind, traffic delay and daylight constraints must be considered before ordering concrete.

8. Safety Controls During Concrete Pouring

Concrete pouring exposes workers to multiple hazards at the same time. These include wet concrete burns, slips, trips, manual handling, pump hose whip, pressure release, falling materials, working at height, unstable reinforcement, moving plant, noise, vibration and poor visibility. OSHA requirements for concrete and masonry construction address formwork, reinforcing steel, concrete buckets, pumping systems and safe removal of formwork. The controls below should be treated as minimum requirements and strengthened where project risk demands it.

- Every worker in the pour area shall wear helmet, safety boots, high-visibility vest, gloves and eye protection. Waterproof gloves and boots are required where direct contact with wet concrete may occur.
- An exclusion zone shall be established around the pump, boom, delivery truck, suspended bucket, discharge point and areas below elevated work.
- No person shall stand under a suspended concrete bucket, boom or lifted load.
- Pump lines shall be checked, secured and controlled by competent personnel. No worker shall open pressurised lines unless the system has been safely depressurised.
- Open edges, penetrations and slab openings shall be protected before pouring starts.
- Rebar caps or equivalent protection shall be provided where protruding bars create impalement risk.
- Adequate lighting shall be provided for early morning, evening or night pours.
- A first aid kit, eyewash water and emergency communication device shall be available close to the work location.

9. Concrete Delivery and Acceptance

Each truck or batch should be checked before discharge. The QA/QC representative or appointed site engineer should review the delivery ticket against the approved order. The ticket should show supplier name, truck number, batch time, concrete grade, mix reference, quantity, admixtures and dispatch time where available. Concrete that arrives outside the permitted time, without a delivery ticket, at the wrong grade, with signs of segregation, or with workability outside the accepted range should not be discharged without engineer approval.

No site worker shall add water to the concrete without written approval from the responsible engineer and supplier representative. Uncontrolled water addition may improve short-term workability but can reduce strength, increase shrinkage, weaken durability and hide the real cause of poor workability. Where workability adjustment is necessary, it should be done using approved admixture and recorded on the delivery ticket or pour record.

Acceptance Item	Action
Delivery Ticket	Check project name, grade, quantity, batch time, truck number, mix reference and admixtures.
Visual Condition	Reject or hold concrete showing segregation, excessive bleeding, contamination or abnormal consistency.
Workability Test	Carry out slump or specified workability test according to the approved testing plan.
Temperature	Check concrete temperature where required by specification or hot weather controls.
Sampling	Take cubes or cylinders at the specified frequency and label them immediately.
Discharge Decision	Accept, hold, adjust with approval, or reject. Record the decision on the pour report.

10. Standard Pouring Procedure

The sequence below should be briefed to the workforce before concrete arrives. The supervisor should maintain control of the pour face and should avoid too many workers crowding one location. The concrete should be placed as near as possible to its final position. It should not be dragged over long distances with vibrators or rakes because this can cause segregation and uneven distribution of paste and aggregate.

Step	Procedure	Hold / Check Point
1	Conduct toolbox talk covering pour sequence, access, PPE, hazards, communication, exclusion zones and emergency arrangements.	Attendance signed before work starts.
2	Confirm pre-pour checklist, pour card, formwork inspection, reinforcement inspection and embedded item approval.	Engineer and QA/QC sign-off before delivery.
3	Receive truck, inspect delivery ticket, check visual condition and perform required workability test.	QA/QC acceptance before discharge.
4	Start placing concrete in the agreed sequence, layer thickness and direction. Avoid free fall beyond specification limits and avoid displacement of reinforcement.	Supervisor controls pour face.
5	Compact concrete using suitable vibrators. Insert vertically where possible, avoid contact with reinforcement and avoid over-vibration.	Continuous observation for honeycombing, leakage and segregation.
6	Monitor formwork, props, shores, embedded items and alignment during placing. Stop the pour if movement,	Engineer checks and authorises restart after correction.

	leakage or distress is observed.	
7	Finish the surface using approved tools and timing. Do not overwork bleed water into the surface.	Finishing supervisor approval.
8	Start curing immediately after finishing when the surface condition allows. Protect from sun, wind, rain, traffic and premature loading.	Curing record opened.
9	Complete pour report, testing records, delivery ticket log, curing log and any non-conformance record.	QA/QC records filed before close of shift.

11. Compaction and Vibration Control

Compaction removes entrapped air and helps concrete flow around reinforcement and embedded items. Poor compaction causes honeycombing, voids, weak cover, leakage paths and poor surface finish. Over-vibration can also harm quality by causing segregation, settlement around reinforcement and excessive bleeding. The supervisor should assign trained workers to operate vibrators and should keep at least one standby vibrator available for significant pours.

- Use the correct vibrator size for the element, reinforcement density and concrete workability.
- Insert the vibrator at regular spacing and keep it in place only until air bubbles reduce and the surface closes.
- Do not use the vibrator to move concrete horizontally over long distances.
- Avoid striking reinforcement, formwork, ducts, sleeves and embedded items.
- Pay special attention to column bases, beam-column junctions, wall corners, congested reinforcement and around waterstops.
- Stop and correct leakage, excessive movement or suspected blockage before continuing the pour.

12. Finishing Requirements

Finishing shall follow the project specification and intended use of the surface. Industrial floors, external slabs, drainage channels, stairs and structural slabs may require different tolerances and textures. The finishing team should avoid starting final finishing while bleed water remains on the surface. Working bleed water back into the top layer weakens the surface and may contribute to dusting, scaling and cracking. Where a power float is used, the operator must confirm that the concrete has reached the correct stiffness and that access is safe.

Surface Type	Expected Finish Control

Foundations and Buried Concrete	Level to specified elevation, maintain cover and protect starter bars or bolts.
Suspended Slab	Strike off to level, control surface tolerance and protect openings or edges.
Industrial Floor	Follow floor specification for flatness, joint layout, hardener, curing compound and traffic restriction.
Drainage or External Slab	Confirm falls, surface texture and water flow direction before final set.
Exposed Concrete	Use clean formwork, controlled compaction, consistent release agent and approved repair procedure for blemishes.

13. Curing and Protection

Curing is not an optional finishing activity. It is part of concrete quality control. ACI curing guidance explains that curing should prevent moisture loss and maintain favourable temperature conditions for a sufficient period so that hydration and strength development can continue. In Nigerian conditions, intense sun, wind, high concrete temperature and delayed curing can dry the surface too quickly and increase the risk of plastic shrinkage cracking, weak surface layers and durability problems.

Curing method and duration shall follow the project specification. Where the specification is silent, the responsible engineer should approve the method based on concrete type, weather, element thickness, exposure condition and required strength development. Common curing methods include wet hessian or burlap, polythene sheet, ponding for horizontal surfaces, curing compound, formwork retention and controlled water spray. Curing materials must be ready before the pour starts, not procured after finishing.

- Start curing as soon as the surface can receive the selected method without damage.
- Protect fresh concrete from rain impact, direct sun, dry wind, dust, traffic, vibration and premature loading.
- Maintain curing continuously for the specified period. Intermittent wetting that allows repeated drying should be avoided.
- Do not remove formwork, props or shores until the responsible engineer confirms that removal criteria have been met.

14. Hot Weather Controls for Nigerian Projects

Many Nigerian projects face high ambient temperature, direct sunlight, traffic delays and limited water control. Hot weather can accelerate slump loss, reduce placing time, increase water demand, increase evaporation, make finishing difficult and increase cracking risk. ACI hot weather guidance recognises temperature, humidity, wind and solar radiation as

factors that can harm concrete quality if not controlled. The project team should treat hot weather planning as a normal part of concrete work, not as an emergency reaction.

Risk	Control Measure
Rapid Slump Loss	Confirm realistic delivery times, avoid unnecessary waiting, use approved admixtures and reject unauthorised water addition.
Plastic Shrinkage Cracking	Pour early morning or late afternoon where possible, shade work area, reduce wind exposure and start curing promptly.
High Concrete Temperature	Coordinate with supplier on mix temperature control, avoid prolonged truck waiting and check temperature where required.
Rain During Pour	Monitor forecast, provide covers, protect fresh surface and stop pouring if rain compromises quality or safety.
Delayed Finishing	Ensure sufficient finishers, lighting and tools are present before delivery begins.

15. Testing, Sampling and Records

Concrete testing provides evidence that the concrete delivered to site and placed in the work aligns with the project specification. Testing frequency, sample preparation, curing and test method should follow the approved ITP and applicable standard. Field samples must be labelled immediately because mislabelled cubes or cylinders make later test results unreliable. Test records should identify the element, pour date, truck number, batch time, sample time, slump, temperature where required, concrete grade, sample identification and the person who took the sample.

Record	Minimum Content
Pour Report	Date, element, concrete grade, volume, start and finish time, weather, crew, equipment, issues and approvals.
Delivery Ticket Log	Truck number, ticket number, batch time, arrival time, discharge time, quantity and decision.
Test Register	Slump, temperature where required, sample IDs, test age, laboratory, results and acceptance decision.
Curing Log	Curing method, start time, inspection times, interruptions and responsible person.
Non-Conformance Report	Description, location, immediate action, root cause, corrective action, approval and closure evidence.

16. Non-Conformance and Corrective Action

Any concrete work that departs from specification or approved method should be recorded and controlled. Common non-conformances include wrong concrete grade,

unapproved water addition, failed slump, late delivery, honeycombing, excessive cracking, cold joint, exposed reinforcement, wrong level, displaced anchor bolts, inadequate cover, formwork movement and incomplete curing. The supervisor should stop the affected activity where continuation could worsen the defect. The engineer and QA/QC representative should assess the condition, protect the affected area and agree the corrective action before covering, loading, patching or continuing adjacent work.

- Do not conceal defective concrete without inspection and approval.
- Do not carry out cosmetic patching before the defect has been assessed.
- Record the location, dimensions, photographs, suspected cause and immediate action.
- Obtain engineer approval for repair method, material and acceptance criteria.
- Close the NCR only after the repair or acceptance decision has been verified and recorded.

17. Minimum Equipment and Materials Checklist

Category	Required Items
Testing	Slump cone or approved workability test equipment, sampling tools, cube or cylinder moulds, labels, curing box or designated curing arrangement.
Placement	Pump or approved placing equipment, chutes, buckets, wheelbarrows, hand tools, levelling tools and communication devices.
Compaction	Primary vibrators, standby vibrator, power supply or fuel, extension leads and safe cable routing.
Finishing	Screed rails, straight edges, trowels, floats, brushes, power float where specified and jointing tools.
Curing	Water source, hessian or burlap, polythene sheet, curing compound where approved, sprayer and protective barriers.
Safety	PPE, barriers, warning tape, signage, lighting, fire extinguisher where required, eyewash water and first aid kit.

18. Concrete Pouring Checklist

The following checklist may be printed and attached to the project pour card. The site engineer, QA/QC representative and HSE officer should sign the completed checklist before the pour starts.

No.	Checklist Item	Status / Comment
1	Approved drawing revision confirmed and available on site.	
2	Formwork, props and shoring inspected and accepted.	

3	Reinforcement size, spacing, cover, laps and cleanliness checked.	
4	Embedded items, sleeves, conduits, anchor bolts and blockouts checked.	
5	Surface or sub-base clean, prepared and free from standing water where not permitted.	
6	Concrete grade, slump or workability, quantity and delivery schedule confirmed.	
7	Pump, pipeline, vibrators, finishing tools and standby equipment checked.	
8	Curing materials available before concrete arrives.	
9	Access, lighting, edge protection, exclusion zones and PPE checked.	
10	Toolbox talk completed and attendance signed.	
11	Testing equipment and sample labels prepared.	
12	Emergency contacts and first aid arrangements confirmed.	

19. Pour Card Template

Field	Site Entry
Project Name	
Element / Location	
Drawing Reference and Revision	
Concrete Grade and Mix Reference	
Estimated Volume	
Planned Pour Date and Time	
Placement Method	
Testing Frequency	
Curing Method	
Site Engineer Approval	
QA/QC Approval	

HSE Approval	
Client / Consultant Approval where required	

20. Delivery Ticket Log Template

Truck No.	Ticket No.	Batch Time	Arrival	Discharge	Volume	Slump / Workability	Decision

21. Post-Pour Inspection and Curing Log

Date / Time	Inspection Point	Observation	Action Taken	Initials
	Surface finish, cracking, protection and curing start			
	Curing continuity and moisture condition			
	Edge protection, access restriction and loading control			
	Formwork or prop condition pending removal approval			
	Final curing completion and handover condition			

22. Revision History

Version	Date	Description	Prepared / Reviewed By
1.0	July 2026	Initial Resource Centre issue for Mega Labourers Services Ltd.	Project Operations / QA-QC / HSE

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