WORK INSTRUCTIONS FOR ENGINEERS

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OP-3-53. CHECKLIST FOR CONCRETE CASTING

	CHECKLIST ITEMS	Checked By Engineer	Remarks
	Project No. : _____ **Project Title :** _____ **Contractor :** _____ **Contractor's Supervisor :** _____ **Date :** _____ **Supervised by :** _____	**Tick (√) if done , or else mark cross (X) if not available at site.**	
1.0	**PRELIMINARIES**		
1.1	Study and review project documents: a) Specification of concreting works. Information gathered shall include: i) Classification of concrete mix - whether prescribed mix or designed mix. If it is a designed mix, note whether it is site mix or ready mix. ii) Requirement for concrete – take note on the: • slump test: _____mm • concrete grade:_____ N/mm^2 • water cement ratio:_____ • additive used: _____ b) Drawings of the structure involved. -Gather information on location, concrete grade (if concrete grade are varies for different structure in the same project), reinforcement, drawing notes, etc. Make sure the specifications tally well with the drawing data. If any discrepancies are found, highlight to the engineer in-charge. c) Proposed method statement by the contractor -Review and comment on the works procedure	☐ ☐ ☐	
2.0	**PREPARATION FOR SITE SUPERVISION**		
2.1	a) Wear all necessary safety equipment (safety helmet, safety boot, etc). b)To bring: i) Relevant construction drawing, ii) Site location plan (if required) iii) Site report notebook or writing pad, pen or pencil. iv) Measuring tape, compass, slope meter, etc. v) Photography equipment (eg. Digital camera, film, batteries)	☐ ☐	
3.0	**SUPERVISION PROCEDURES.**		
3.1	Make sure the supervisor/engineer in-charge (as in the organization chart) is at the site before carrying out the works. Do not proceed if the supervisor is not at the site.	☐	

3.2	Consult the person in-charge on the detailed working procedures. (eg: area to be cast, concrete arrival time, machineries record, manpower)	☐	
3.3	Double check the location of the structure as per drawing. Use compass with reference to the drawing.	☐	
3.4	If ready mix concrete is used, make sure the trucks do not wait over the maximum waiting periods before placing of concrete including the transportation time, (based on JKR specification): i) Maximum of one hour from batching time on hot days. ii) Maximum of two hours from batching time on cloudy days. (however, if additive is used, the waiting period may be differ from the above and need to be checked with the specification from the supplier).	☐	
3.5	Check the structure reinforcement: • Type, size and number of bars as per drawing. • Reinforcing bars is in good condition. (no corrosion & clean) • Sufficient lap/anchorage length is provided (normally 40 X bar diameter or as specified in drawing) • Reinforcing bars shall be supported by chairs or concrete blocks to hold them at a distance away from the outside face of concrete (cover) and between different layers of bars. The chairs or the concrete blocks should have sufficient rigidity to ensure it does not deform when reinforcement bars are placed on top of them. • Make sure chairs or concrete blocks are sufficient.	☐	
3.6	Make sure that the formwork shall be clean and free from standing water immediately before the placing of the concrete.	☐	
3.7	Sample shall be taken at the point of discharge from the mixer or if ready mix, at the point of discharge from delivery vehicle for slump test.	☐	
3.8	The test cube shall be tested for 7-day, 14-day and 28-day compressive strength. (check against the specification on the frequency and requirement eg. three cubes for each 50m^3 in slabs, beams and large foundation) All cube tests shall be witnessed and verified by R.E. or Clerk of Work.	☐	
3.9	Make sure that binding layer (lean concrete) is applied prior to placing the concrete that is in contact with the ground. (if binding layer is specified in the drawing)	☐	
3.10	If concrete is to be placed directly on subgrade, the subgrade shall be moistened to prevent extraction of water from the concrete.	☐	
3.11	Concrete should only be dropped from the allowable distance, and should not bounce across reinforcing bars or other obstructions which may cause segregation.	☐	

3.12	Concrete should be thoroughly compacted by vibrator and be thoroughly vibrated around the reinforcement, tendons and into the formwork. Vibrator should not hit the reinforcing bar or the formwork.	☐	
3.13	The vibrator should be lowered vertically into the concrete. Compaction is deemed to be completed when cement mortar appears in an annulus form around the vibrator.	☐	
3.14	Concrete shall not be placed after initial set has been reached, and should not be remixed after the initial set. (Cold Joint usually formed 1 hour after last pour). If concreting for a panel cannot be completed in one single operation, proper construction joints shall be installed. The construction joints requirement shall be in accordance to the specification.	☐	
3.15	Concrete shall not be subjected to any disturbance within 24 hours after compaction. No standing (pond) or flowing water shall be in contact with exposed concrete surface within the first two hours of placing and compacting the concrete.	☐	
3.16	Ensure that the concrete, after it has set, be kept continuously damp until it is thoroughly cured. All exposed surfaces shall be continuously covered with damped gunny bags or shall have water impounded on them for the full period of curing which is not less than 7 days.	☐	