METHOD STATEMENT

FOR

PEDESTRIAN WALKWAY CONCRETING – BROOM FINISH CONCRETE

Project No:

REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS

PREPARED BY:	REVIEWED BY:	APPROVED BY:
QA QC ENGINEER	MAINTENANCE MANAGER	DEP. HEAD

Document Revision History

The revision and issue numbers done on this document with a description of changes shall be recorded on the "Document Revision History" specified on the cover page of this procedure. It is the responsibility of the HSE Officer to update these details, whenever changes and revisions are made to this document.

Revision No	Issue Date	Description of Changes	Pages	By

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1. PURPOSE

The purpose of this concreting method statement is to define the guidelines for the preparation of the concreting work for the pedestrian walkway (broom finish) and to ensure the safe execution of all the concrete works during the construction phases of the project to eliminate the risk of injury or damage to personnel, equipment, and property.

2. OBJECTIVE

The method statement document outlines the method on how to execute the broom finish concrete work including concreting, reinforcing bars, and formworks according to the requirement and standard code of practice for construction. In addition, it also covers the requirements for general concreting works including materials, mixing, formworks, reinforcement steel bar, curing, testing, and another related requirement for concreting work of broom finish walkways.

- All materials have been checked and there are no shortages.
- Materials are suitably stored to minimize damage.
- The site dimensions are compared with installation drawings.
- The partitions are to be installed on the underside of an existing suspended ceiling grid.
- To enable the grid to be made good if the partitions are relocated, fixing the main runner should be avoided.
- All fixings should be positioned on 1200mm or 600mm cross tees.
- To achieve stated levels of performance, it is imperative that the following methods of installation are followed and that all components supplied with the system are included in its construction.

3. MATERIAL MACHINERY & OTHER RESOURCES

The following list of materials shall be deployed to the site for the broom finishes work:

- Concrete
- Spacer block
- Reinforcement steel bar/BRC Sheet
- Steel wire to tie reinforcement bars
- Plywood and timber
- Curing compound (If necessary)
- Expansion joint

The following list of machinery shall be deployed to the site for the concrete works:

- Backhoe
- Concrete vibrator
- Concrete pump (if required)
- Hand tools
- Bar cutter & bar bending machine
- Formwork
- Submersible pump (if required)
- Generator
- Air blower
- Concrete broom

The following labor resources shall be deployed to the site for the concrete works:

- Backhoe operator
- Site Engineer
- Site Supervisor
- QA/QC inspector
- Land surveyor
- Safety officer
- General workers
- Skilled workers

4. ROLES & RESPONSIBILITIES

Overall Contractor Company is responsible for ensuring that work activities are conducted safely and that personnel is not placed at risk from the hazards associated with the activities covered by this method statement. Specific responsibilities are as below:

4.1. Project Manager

- Exercise overall responsibility for HSE protection, including work for which a Permit To Work (PTW) and a Confined Space Permit have been issued.
- Authorize Permit Requester in writing and confirm that they are appropriately going through PTW training.
- Responsible for the management of the site activities including the effective application of the quality system.
- Liaisons and corresponding with the Consultant's Representative, Engineers, Local Authorities, Sub-subcontractor, and Supplier to ensure that the works are carried out as per contractual requirements.
- Monitoring and ensuring the Project is progressively positive in aspects of cash flow, cost quality, and timely completion.

4.2. HSE Engineer/Officer

- Exercise overall responsibility for HSE protection.
- Manage the overall safety, health, and environmental activities in the project organization.

- Responsible for planning, formulating, and enforcing safety policies and regulations.
- To identify variances and take corrective actions to protect personnel and property against accidents.
- Advise management on all Occupation Safety & Health (OSH) matters.

4.3. Construction Manager

- Control of the daily operation of the construction activities on site.
- Overall planning and overseeing the implementation of the works program over particular sections of the project;
- Ensure implementation of the work procedures and relevant method statements.

4.4. QA/QC Engineer

- Implement, monitor, and verify that all construction operations are being conducted following the established quality procedures.
- Monitor and review non-conformance and corrective actions, maintain records, and ensure the corrective actions are followed and complied with.
- Responsible to ensure that only qualified and competent people are working on the project activities to deliver the project successfully.
- Carry out inspection on-site activities to ensure accordance with the IFC drawings and project specifications.
- Managing and witnessing material sampling, performance tests, and inspections if required.

4.5. Site Engineer

- Responsible for material management & engineering coordination.
- Checking and clarifying discrepancies in drawing well before work is carried out.
- Managing and witnessing material sampling, performance tests, and inspections if required.
- Advising on technical matters.

4.6. Surveyor

- Carry out all land surveying works on site which includes plotting, protecting, and transfer of control points.
- Responsible for setting out including identifying discrepancies in drawings.
- Responsible for recording and maintaining all survey data and joint surveys.
- Ensuring all equipment is calibrated and safe keeping of all survey instruments and equipment.
- Cross-checking the data/computation for as-built data.

4.7. Site Supervisor

- Organize and supervise the duties of supervisors on site.
- Issuing the RFI for construction works to be acknowledged by Quality Department.
- Checking work to eliminate mistakes and abortive works;
- Supervising and coordinating works among subcontractors.

4.8. Work Procedure for Broom Finish Concrete

- Survey and setting out works shall be conducted to provide the existing slab levels and alignment.
- The designated walkway area shall be removed with allowance for the thickness of lean concrete, crusher run, and concrete slab.
- Excavation work is to proceed upon completing hacking / removing the existing walkway slab. Excavation work is to be executed by use of manpower i.e. manually.

4.9. Concrete Pedestrian Walkway Construction

- The construction of the concrete walkway will commence as soon as excavation work is accepted by the Consultant.
- As excavation reaches the required depth, the surface shall be leveled and shall be compacted by the use of a plate compactor to prevent settlement.
- Before the compaction starts, make sure that the excavated level is free from standing water or excessive moisture content.
- Built the formwork to the side of the concrete walkway slab and supported by timber bracing to prevent formwork collapse.
- Lean concrete is to be poured when side formwork has been completed and space blocks are placed before the BRC sheet has been laid. BRC sheet should be bent and cut into the required length and tied inside the formwork.
- Make sure the BRC sheet is placed properly on spacer blocks to avoid touching the lean concrete below.
- The BRC sheet shall be clean and free from loose mill scale, loose rust, oil, or other coating which is liable to weaken the bond between the concrete and steel before being placed in the formwork.
- Placing and bending of hooks, anchors, bars, clearance, laps, and splices shall be following the requirement of BS 4449 or MS 146.
- Before concrete placing, all the formwork support and bracing shall be checked and tightened properly, and cleaning of the debris to be done, formwork from inside should be in order and well maintained.
- Concrete is to be poured directly from a concrete truck. Place the concrete as close to its final destination as possible to avoid segregation.
- Spread, screed, and vibrate the concrete so that it fills all the space/gap inside the formwork.
- Using wood float, start to float the concrete to the desired level and flatness before the appearance of excess moisture.
- Keep the surface open until bleed water is coming out of the matrix and the surface becomes saturated and dry.
- After floating and the surface become hardened sufficiently, start troweling using steel trowels at constant medium pressure to ensure uniformity of the surface.

- The groove line is to be inserted according to the specification and drawing with 6mm rebar. Remove the rebar before the concrete hardens.
- Expansion joint UPVC model 30EXJ-9 to be provided at every (6) meters or as per drawings.
- Broom the surface by pulling the broom towards oneself from edge to edge and repeating each pass with a slight overlap.
- Keep the texture perpendicular to the traffic direction. Once finished brooming, go over the corners and control joint.
- Formwork shall be dismantled and removed from the cast of concrete without shock, disturbance, and damage.

4.10. Concrete Sampling & Testing

- Samples of concrete for tests shall be taken for making cubes as and when directed by the Consultant.
- The concrete compressive strength test shall be carried out for 7 days, 14 days, and 28 days or as directed by the Consultant.
- The number of cubes may be reduced if consistently satisfactory results are obtained, or increased up to a maximum of 16 when, in the opinion of the consultant additional tests are required, for example, in the early stages of the work.
- Test cubes shall be made, cured, and stored under the same conditions as the works to which they relate and shall be transported and tested following BS EN 12390-1.
- Reports of all test certificates shall be submitted to the Consultant within 24 hours after testing to close the Request For Inspection (RFI).
- The concrete cube test record shall be used to record the cube test information and also summary cube crushing test will record the results on the test cube conducted.

4.11. Concrete Cubes Preparation

- Nine (9) cubes shall be made in each batch of samples taken. The total cubes for each test (7 days, 14 days, and 28 days) shall be determined by the Consultant.
- Every test cube shall be clearly and permanently marked with its code number and date of casting together with an indication of the part of the works to which it relates.
- The system of identifying and marking the cubes shall be decided by the Consultant.
- A record of such tests identifying the test cubes with the part of the work executed shall be kept at the site and made available to the Consultant on request.

4.12. Slump Test of Concrete

- Slump tests shall be done in every batch/load of concrete supply.
- The slump tolerance shall be within the range specified in the design mix concrete.
- Slump to be ensured within the design slump as indicated in the design mix to prevent honeycombing.
- In case of failed slump test, the load of concrete supply shall be rejected as it may harm the durability of the completed concrete structure.

4.13. Curing and Protection

Concrete shall be protected during the first stage of hardening from the harmful effects of sunshine, drying winds, rain, or running water. The protection shall be applied as soon as practicable after the completion of placing concrete by one or more of the following methods:

A. The concrete shall be covered with a layer of sacking canvas, hessian, straw mats, or similar absorbent material, or a layer of sand, kept constantly wet for 7 days;
B. After thoroughly wetting, the concrete shall be covered with a layer of approved waterproof paper or plastic membrane kept in contact with the concrete for 7 days;
C. The concrete shall be cured by application of an approved liquid curing membrane which shall be applied immediately after placing the concrete during the initial set stage and on vertical surfaces after removing the formwork.

The application of the curing compound shall follow the instruction provided by the manufacturer.

4.14. Concreting of Pedestrian Walkway (Boom Finish):

1. Setting Out alignment/location/level land surveyor to be approved
2. Excavation for base
3. Compaction of base level by using the plate compactor
4. Lay lean concert, thickness to be checked
5. Installation of formwork, vertical & horizontal panels to be tied and dimensions to be checked. Ensure all gaps are sealed and cleanliness maintained. Depth of concreting work to be marked on formwork.
6. Lay reinforcement bar (BRC); to ensure size, position, and spacing are checked. Place spacing block to provide cover for concreting.
7. If any, M&E conduit/pipe/opening/sanitary/water supply is in place and checked before concreting.
8. Expansion joint/construction joint/ water stop will be put in place and checked
9. Concreting work proceed, samples for slump test and test cube were taken and tested, and concrete vibrated to ensure no material segregation occurred.
10. Booming the surface from edge to edge and providing a groove line by putting 6mm rebar. Remove the rebar before the concrete hardened.
11. After the concrete is settled/set, dismantle the formwork and check for defects.
12. Completed concreting work verified.

5. CONCRETE QUALITY CONTROL INSPECTIONS

5.1. Pre-Concreting Inspection

- Before concrete pouring, inspection as per the pre-concrete inspection checklist shall be carried out and approved by the Consultant.
- The contractor's Quality Team shall ensure all the formworks and reinforcements are installed following the requirements specified in the project specifications and/or standard code of practice before the commencement of concreting works.
- The concrete vibrator shall be in standby mode and available during concrete pouring.

- In addition, the Contractor shall ensure all the formwork support and bracing are checked and tightened properly.
- Except otherwise directed, concrete shall not be placed unless the Consultant is present and has previously examined and approved the positioning, fixing, and condition of the reinforcement and of any other items to be embedded and the cleanliness, alignment, and suitability of the containing surfaces.

5.2. Quality Control While Pouring Concrete

- The temperature of the concrete shall be taken and recorded in the Concrete Pour Card.
- No concrete having an internal temperature exceeding 33°C shall be deposited and the concrete shall not be placed in formwork or around reinforcement whose temperature exceeds 36°C.
- The slump test shall be carried out following BS EN12350-2 and shall not be less than 50mm. The slump tolerance shall be within the range specified in the design mix concrete. Concrete that has a slump of less than 50mm (2 in) will be rejected.
- The concrete shall be deposited as nearly as possible in its final position, working from the top end, if any. It shall be placed in such a manner as to avoid segregation of the concrete or displacement of the reinforcement, other embedded items, or formwork.
- All concrete shall be fully compacted by continuous vibration throughout the full extent of the layer before the initial set has taken place and shall not be subsequently disturbed. It shall be thoroughly worked against the formwork and around any reinforcement and other embedded items without displacing them.
- The concrete cube sample should, where applicable, be taken at the point of discharge from the mixer in the case of ready-mixed concrete.
- Post-Concrete Defect Handling
- Where the defect is detected during post-concreting, the concrete repairing work shall be carried out after post-concreting inspection.
- The defect like cracks and honeycomb shall be repaired using non-shrink grout cement or epoxy grouting.

6. Health Safety & Environmental Requirements

The following key areas of construction shall be adhered to by all site personnel working on site.

6.1. Personnel Protective Equipment

The personnel protective equipment (PPE) will be provided to the workers onsite that includes the following:

- Safety helmets (hard hats)
- Safety vest
- Safety boots
- Safety glasses
- Dust mask
- Working gloves (if necessary)

- Ear plugs (if necessary)

6.2. House Keeping

Housekeeping is an essential part of safety for the daily routine. Housekeeping would include the following items:

- Maintain access/egress to all working areas.
- Store and stack all construction materials in a safe and orderly manner.
- Avoid littering around the job site.

6.3. Environment Issues

- Temporary drains/sediment pond/silt fence will be constructed and maintained throughout construction periods to ensure compliance with the legal requirement.
- A water bowser will be deployed at the site to control the dusty surfaces by spraying the water.
- To achieve a safe, risk-free, and healthy working environment including loss prevention, every practicable step must be taken by every employee engaged in the project site.

7. Attachments

7.1. Risk Assessment