



METHOD STATEMENT

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SHUTTERING, SAFE ERECTION, OPERATION AND DISMANTLING OF
SLIP FORM SHUTTER

Department
Civil

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METHOD STATEMENT

FOR

SHUTTERING, SAFE ERECTION, OPERATION, AND DISMANTLING OF SLIP-FORM SHUTTER

Project No:

REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS

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



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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 objective of this method statement is to set down the procedures that are involved in the safe erection, operation, and dismantling of a slip form shuttering, applicable for the construction of a core for the project building.

2. SCOPE

This method statement covers the procedures that are involved in the safe erection, operation, and dismantling of a slip form shuttering, applicable for the construction of a core for the project building.

3. RESPONSIBILITIES

The project manager shall ensure that the repair works are carried out following the specified requirements and that all necessary resources are provided. The supervisor shall ensure that the repair works are carried out safely and efficiently and that all necessary quality control checks are carried out.

4. ROLES AND RESPONSIBILITIES

4.1. Project Manager

The PM has overall responsibility for the implementation of this method statement and to ensure that all staff and workforce are aware of the method of formwork activity and the associated risks. He is also responsible for ensuring adequate manpower, plant, and materials are available to carry out the formwork safely and as planned.

4.2. Slip Form Manager

The slip form manager will ensure that the safety rules and regulations are followed by all slip form personnel.

4.3. QA/QC Engineers

The QA/QC should ensure that all construction work is carried out following contract specifications and drawings.

4.4. HSE Engineer

Health and Safety Engineer shall ensure compliance with the Project Safety Plan.

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4.5. Construction Manager

The CM is responsible for the implementation of the QA/QC procedures for slip forming, as set down in the total quality management procedures and documentation. He also has to ensure that the slip-form rig is kept within tolerances for verticality and plan dimensions.

The construction Manager will have the following responsibilities in detail:

- Monitor for verticality and plan dimensions
- Monitor workmanship of steel fixing, carpentry, and concrete placing
- Set out and maintain levels for box outs and openings
- Set out changes in geometry and reinforcement
- Monitor the quantity of the finished concrete
- Record and report defects
- Perform As-built surveys
- To explain in toolbox talks the work methods to operatives

5. METHOD FOR DELIVERY OF SHUTTERING MATERIALS

- All operations are to be carried out in strict accordance with the Health & Safety at Work Act 1974, The Management of Health and Safety at Work Regulations 1999, the Construction (Design and Management) Regulations 1994, and the Contractors Safety Policy and are to be supervised by appointed HSE personnel. All the supervisors are to be responsible for all operations in respect of raising and steering the slip form.
- The specialist slip-form equipment will be delivered in kit form in 20' containers from the suppliers/fabrication companies. The equipment will be suitably boxed, palletized, or banded in bundles weighing not more than 2 tons for offloading on-site by either a forklift truck or crane.
- In addition, the timber will be delivered directly from the local suppliers.
- As far as practicably possible 24 hours' notice of delivery will be given to the site.
- An estimated laydown area of 225 m² should be allocated for the deliveries.
- The contractor is responsible for the safekeeping of the equipment on site.
- The initial deliveries will include modular steel panels, clips, yoke frames, bolts, and sufficient walings for panel assembly.

5.1. Base Slab Preparation

- Kickers are not required for assembling the slip-form shutter but the base slab is required to be level as far as practicably possible.
- The base slab shall therefore be checked by the main contractor for line and level before any assembly work is started.
- The highest point shall be identified and packing pieces, supplied by the main contractor, be made available. Lines for the walls are to be offset 200mm so that the form panels can be set in position by measuring from behind.
- Vertical starter bars should be 1.2 m high, checked for line and position, and should allow the form panels to be positioned correctly.



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- Horizontal reinforcement shall be fixed to 1.2 m above the slab together with all inserts that are below this level.
- Correct cover shall be obtained and maintained without forcing the steel shutter.
- Frames for openings shall be anchored to the base slab and shall be made 20 mm narrower than the wall thickness and then positioned centrally in the wall.
- Where frames coincide with a lifting point they shall be fixed in sections to allow positioning of the yoke frames and provided with bracing for the (48.3mm OD) climbing tube at 1.0 m above the slab.

5.2. Assembly of Slip Form

- For assembling the slip-form shutter a working area of 2 m wide is required to be cordoned off around the perimeter of the base slab.
- In addition, an area measuring 8m x 4m, shall be allocated for pre-assembling yoke frames.
- Cranage should be made available when required throughout the assembly period.
- The main requirements are:

5.2.1. To unload the containers/wagons

- To transfer materials from the lay-down area to the base slab and the yoke pre-assembly area.
- Lift pre-assembled yoke frames onto the assembled forms.
- This operation requires a high degree of care and precision in placing them as they straddle across the wall forms and are guided down and bolted into position by two operatives working one on each side.
- To assist in handling top deck timber bearers into position on top of the yoke frames.
- The slip form shutter is progressively assembled in the order: Of forms – Yokes – Platforms – Hydraulics & Services – Acceptance.

5.2.2. Setting Up the Form Panels

- Under the supervision of a specialist supplier, the form panels are set up and clipped together according to the sizes and positions shown on the assembly drawings.
- Completed sections are then clipped to the wailings in lengths according to the wailing lengths indicated on the drawings.
- Follow the assembly drawings carefully concerning the position and orientation of the wailings, which are slotted channel sections of standard 3m and 1.5m lengths plus specials, as they are bolted together back to back to form splices and overlaps to make up the complete wall form lengths and properly utilize the components supplied for the contract.
- At the discretion of the supervisor, internal bracings are usually fitted at this stage to aid in setting up and maintaining the position of the forms.



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- The forms shall be set up with the correct amount of taper, equally applied to both sides of a wall.
- The correct position, thickness, and form taper of each wall shall be confirmed by the relative position of the form panels from the offset lines and timber spacers inserted in between the top of the forms.
- Equal taper shall be confirmed by spirit level readings taken on both sides of the forms.

5.2.3. Installation of Yokes

- There are two preparatory stages before the installation of the yokes onto completed sections of wall forms:
- Pre-assemble yokes in the designated area. Two frames are required per lifting point shown on the drawings.
- Pre-drill the top deck timbers to the schedule given on the drawings. The 18mm holes must be drilled straight and true and on the center line of the timbers.
- As sections of wall form are assembled and internally braced, yokes can be fitted into position. Centre line positions of the lifting points are marked off on each side and a 'wailing bracket' is loosely bolted to each waling.
- A supervisor will advise as to the type of connection to use as it is dependent upon the orientation of the wailings as described above.
- Each yoke frame is uplifted from the pre-assembly area and transferred to the slip form by crane and carefully guided into position by two operatives working one on either side of the wall form. The legs are loosely bolted to the waling brackets and checked for plumb.
- As yokes are lifted into position top deck timbers are positioned and loosely bolted to upper cross beams. The sequence of this operation can be determined by studying the working platform drawings. Once sections are completed the process of fixing the yokes into position and tightening the bolts can take place.
- This involves plumbing the yokes and checking the forms for position and taper as described in the above sections.

5.3. Assembling the Suspended Platforms

- It should be noted that only the working deck (i.e. that which is sited directly on top of the forms) and the top deck, can only be assembled at this stage.
- The suspended platform can only be installed after slip-forming operations begin and the slip form has climbed 1.8 m.
- Initially, the top deck 100 x 100mm timbers are prepared following the cutting schedule. The timbers are erected and bolted to the top of the yolk legs. An access deck should be provided to the underside of the deck to allow the safe installation of the top deck timbers.
- The main working platform is supported by timber bearers mounted on top of steel platform brackets which are bolted to the wailings.



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- Generally, these brackets are installed after the yokes have been set and fixed in position to provide the maximum working space around the yoke legs.
- However in some instances particularly on internal forms where diagonal bracings are shown on the drawings to pass through them, they need to be fitted on beforehand.
- To compensate for the different orientations of the wailings, 10 mm thick plate washers are provided as packers.
- Unless directed by the specialist supervisor, the external waling bracing can be fixed at the same time as the platform brackets are fitted but before the decking is laid.
- Decking timber and toe boards should be installed following the working drawings.
- Openings for access to upper and lower decks shall be made in positions agreed upon with the specialist supplier.
- As external platforms are laid at either the main working or upper level so the handrail posts shall be fixed in positions as shown on the drawings.
- Guardrails shall be fitted as soon as practicably possible.

5.4. Hydraulics and Services

- A specialist supplier representative will show how the jacks and hydraulics are installed but will usually undertake the pressure testing operations.
- Testing will necessarily involve the use of the hydraulic pump. Therefore at the stage when jacks and hydraulics are being installed the electrical services provided by the main contractor should be installed.
- Although shown on the drawing, the specialist supervisor will ultimately decide where the hydraulic pump is to be located.
- Provisions for lighting and power supplies to the illuminated target boxes should also be installed.

5.5. Acceptance and Approval

- It is usual to fix the first lift of vertical steel, lace the horizontal bars up to the underside of the cross bars and install any inserts that can be fixed.
- Under no circumstances should any part of the slip form be used as anchorages or supports to gain leverage in correcting reinforcement that is out of position irrespective of whether it is by the use of crowbars, props, or pulling devices.
- Final checks and acceptance of the slip form as fit to commence slip-forming operations are given only after the reinforcement has been checked and approved.
- Acceptance by the client shall be obtained as per the quality approval procedure on the project.

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5.6. Slip forming Operations

- Slip forming of the core will be done on day shifts only. This involves sliding the top half of the forms clear after concreting finishes for the day to prevent bonding overnight.
- It is necessary to clean the exposed top section of the forms, usually by using pressure washers with a rated capacity of 2000 psi. Or other approved methods. Failure to do so will cause a marked deterioration in the concrete finish as well as increase the drag on the forms.

6. Attachments

6.1. Risk Assessment