



# DINCEL STRUCTURAL WALLING

---

ELIMINATE SCAFFOLDING



#### PATENTS

The following information presented is patented intellectual property.

#### COPYRIGHT

© Dincel Construction System Pty Ltd

All rights reserved. No part of the information contained in this document may be reproduced or copied in any form or by any means without written permission from Dincel Construction System Pty Ltd

#### DISCLAIMER

The information contained in this document is intended for the use of suitably qualified and experienced architects and engineers and other building professionals. This information is not intended to replace design calculations or analysis normally associated with the design and specification of buildings and their components. Dincel Construction System Pty Ltd accepts no liability for any circumstances arising from the failure of a specifier or user of any part of Dincel Construction System to obtain appropriate professional advice about its use and installation or from failure to adhere to the requirements of appropriate Standards and Codes of Practice, and relevant Building Codes.

## FAÇADE WALL CONSTRUCTION WITHOUT SCAFFOLDING

### INTRODUCTION

In any building construction the safety of the workers and the public are of prime importance. Scaffolding is required for the fall protection of workers, protection from falling/flying building tools, materials and to prevent injury to the public or building workers. The presence of safety hoardings to protect public by-passers from falling objects should not be compromised under any circumstances. The provision of safety zones during the works being carried out overhead within the construction site is another way of acceptable protection of site workers or by-passers below. However, there could be circumstances where the safety scaffolding for the fall protection of workers cannot be provided. **The following procedure addressing the constructability without scaffolding has been provided to WorkCover, NSW on August 2007 for the construction of a new building at 39 Queen Street, Auburn, NSW and the façade walls of this project has been built accordingly.** Refer Photo 1. Photo No: 2 shows a wall without windows built without scaffolding.

## METHODOLOGY

Those parties who wish to utilise the following methodology must consider the following:

- This methodology is suitable only for 200mm thick Dincel-Walls.
- The construction principles outlined below, for façade wall installation without the safety scaffolding for fall protection, requires skilled installers who are aware of all Occupational Health and Safety requirements. **This methodology must be implemented under strict control and certification by qualified formwork design and construction engineers.**
- Each and every project must be assessed on its own merits. Construction management should provide a work method statement to the relevant WorkCover authority.
- This document must be read in conjunction with Dincel's Construction Manual – latest revision. It is the customer's responsibility to obtain the latest version of the Construction Manual prior to any work taking place.

It is important for authorities, building professionals and installers to understand that the following provisions need to be considered for works without safety scaffolding.

- (i) Dincel-Forms are lightweight (13kg per 3m length) and therefore can be handled easily by one person for the installation procedure outlined below.
- (ii) Dincel-Forms' patented snap-on provision provides an extremely strong connection between each individual module, hence each module does not need to be stabilised during installation.
- (iii) To implement the following methodology, the façade wall windows must commence at a minimum of 1,000mm from the finished floor level. The presence of Dincel-Forms above the formed deck provides an immediate safety handrail for fall protection.
- (iv) Dincel Construction System allows for all reasonable sized windows, as long as the window frame can be lifted to the position where it can be installed from the interior of the building without the need of external scaffolding for installation purposes.
- (v) When Dincel is used there is no need to have scaffolding for the following reasons:
  - **External Wall Finishes:** Dincel can be used without paint/render finish. If finishes are required, they can be applied using a swinging stage (Refer Photo No: 1).
  - **Windows** with Dincel can be installed from the inside of the building. (Refer Dincel Construction Manual).



PHOTO 1  
QUEEN STREET – MEDICAL CENTRE



PHOTO 2  
RICHARD CROOKES – POTTS POINT

Dinzel Construction System further recommends:

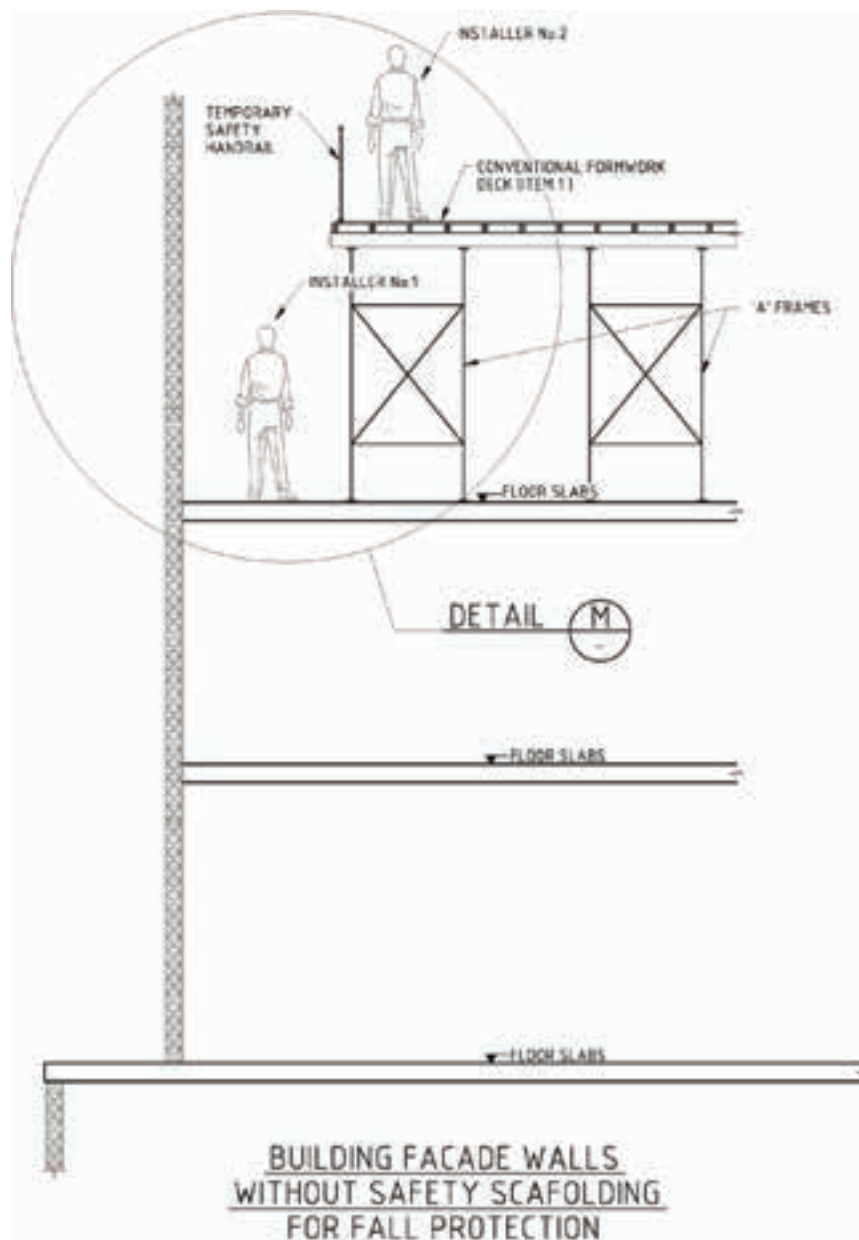
- (i) No installation should continue if high wind loadings are experienced during installation.
- (ii) The formwork engineer must check the size of hooked bracing (Item ④ of Detail M) and its screw connection to the formed deck (Item ① of Detail M).

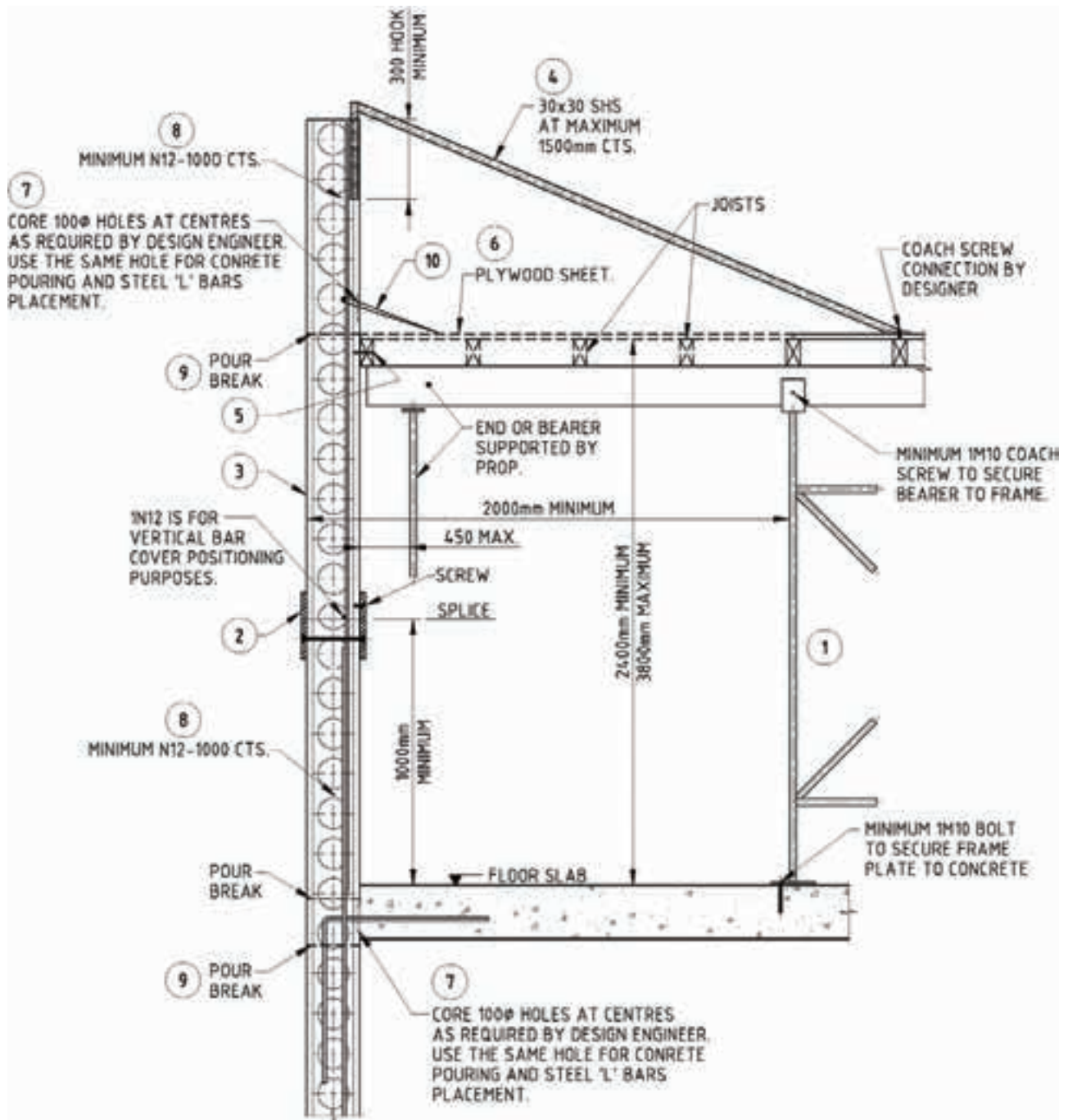
The joists immediately under Item ④ of Detail M fixing point shall be skew nailed from both sides into the bearer.

- (iii) Remember the most important rule, if you are not sure; ask the question to the professionals. Dinzel Construction System can recommend consultants

to attend construction sites for your specific needs. Alternatively, the structural engineer for the project or an independent formwork engineer can certify the above methodology on behalf of the installer.

The reader of this manual must have a clear understanding of the following methodology offered by Dinzel Construction System as a manufacturer, and is a guide only and does not replace the responsibilities of appropriately qualified professionals. Dinzel Construction System Pty Ltd accepts no liability for any circumstances arising from the failure of the installer not obtaining appropriate professional advice, or not adhering to the safety requirements of the Formwork Code of Practice.





DETAIL M

**BUILDING FACADE WALLS  
WITHOUT SAFETY SCAFFOLDING  
FOR FALL PROTECTION**

SUITABLE ONLY FOR 200mm DINCEL-WALL

## PRINCIPLES

1. The formworker places the 'A' frames, bearers, joists and plywood deck (Item ①) at a minimum of 2,000mm away from the face of 's safety handrail already in place as shown on Detail M above.
2. The installer places plywood sheets (Item ②) to receive Item ③. Both faces of the plywood sheets shall be connected to each other by snap ties or Z-bars at 666mm cts. Or alternatively, plywood sheets can be replaced with the P-WS module which needs to be screw fixed to the wall. The screw fixing at each P-1 module shall comprise a minimum of one screw to be used to fix P-WS. Provide at least one screw fixing between P-WS and the wall over at the internal face for P-1 module. If P-WS is used the concreter is to make sure that the wall below the P-WS is filled properly first.
3. The first installer on the floor slab below lifts Dincel-Form (Item ③).
4. The second installer positioned on the formed deck (Item ①) stabilises the top of Dincel-Forms being lifted with Item ④ hook bracing.
5. The first installer places Dincel-Form (Item ③) in between plywoods (Item ②) and places one screw (2mm diameter coarse tread) while the top of Dincel-Form (Item ③) is held by the second installer.
6. The following Dincel-Forms (Item ③) are snapped to the previously placed Dincel-Form, then the first installer screws the forms to at least every second Dincel-Form to Item ② - plywood sheets at the internal face (or P-WS).
7. The installer repeats Steps 3, 4, 5 and 6 for each Dincel-Form (Item ③) and hook bracing (Item ④) is secured onto the formed deck (Item ①) at 1,500mm cts.
8. The installer repeats Step 7 along the length of the wall being installed.
9. The installer places and nails the missing formwork joists to the bearer in between the previously formed deck (Item ①) and Dincel-Form (Item ③).
10. Place the joist (Item ⑤) against Dincel-Form and provide 2mm diameter coarse tread screw at each Dincel-Form. Item ⑤ is utilised to assist the straightness of Dincel-Walls. Alternatively, an additional member (timber or metal) can be attached to the underside of the formwork bearer and face of Dincel-Wall for wall straightness purposes only. (Not shown clarity purposes on the detail M).
11. Place and nail Item ⑥ plywood sheets on the joists and Item ④ can then be removed.
12. Removal of each hooked bracing (Item ④) can be repeated at every second hooked bracing, i.e. 3,000mm cts, upon placement of plywood decking as per Step 11. Or alternatively, if there are enough hooked bracings available, the placement of joists and plywood sheets can be completed at a later stage.
13. Provide 100Ø core holes (Item ⑦) as directed by design engineer.
14. Provide minimum N12 @ 1,000 bars - Item ⑧ (or as required by design engineer). Pour concrete from the position of Item ⑦ to the pour break shown (Item ⑨). The concrete pouring through Item ⑦ is recommended for keeping the forms' faces clean and the workers do not need to lift the concrete discharge hose to pour concrete into the forms.
15. For high wind loading situations, conservative additional security can be implemented by placing 1N12 – 2,000mm long horizontal bar spaced at 1.0m apart from each other (for concrete pump nozzle access purpose) secured to the plywood deck by double lap tie wire at a maximum of 1,000mm cts (Item ⑩).

## CONSTRUCTION AT LIFTS, STAIRS AND SERVICE SHAFTS WITHOUT SCAFFOLDING

Openings within slabs are normally protected with the provision of scaffolding. The following are the alternative details which will enable the construction without scaffolding.

NOTE: The main difference between the details below is the presence of horizontal reinforcement. Engineers know that horizontal reinforcement is provided in conventional reinforced concrete walls for crack control purposes only for walls designed as non-shear walls. ([Download – Why Engineers Can Omit Crack Control Steel in Dincel-Wall](#)). Shear walls contain an engineered quantity of horizontal steel bars to cater for earthquake/wind loadings in multi-level buildings.

Lift shaft walls are often designed as shear walls and the engineer may incorporate the stair wall as a shear wall, depending on the design parameters.

