

# SAFETY ALERT

## TEMPORARY BRACING OF CONCRETE TILT-UP PANELS

This safety alert is published following an incident involving the collapse of a concrete tilt-up panel weighing approximately 40 tonne, resulting from bracing that was not installed to the engineer's design failing under a moderate wind loading.

WorkCover reminds employers and those in control of the work site that temporary bracing needs to be designed taking into account the panels, the site location, the access needs on site, and the erection and dismantling sequence.

Any changes to the bracing system, including the connection location and the numbers per panel, should not be undertaken until the design has been reviewed and then approved by an engineer.



## OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

The *Occupational Health and Safety Act 2000* requires employers and those in control of workplaces to take all necessary steps to ensure that safe systems of work are implemented, maintained and supervised, and that persons undertaking them are provided with adequate information and training to ensure their safety.

The *Occupational Health and Safety Regulation 2001* clauses 234 and 266 provide more specific obligations on preventing the structural collapse of a building during a temporary state of weakness or instability, and on the certification for persons carrying out rigging work, such as tilt-up installation.

The *Code of practice for technical guidance* incorporates Australian Standard 3850 – 2003 *Tilt-up concrete construction*, which provides practical guidance on tilt-up construction.

## RISK CONTROLS

The safe erection of concrete panels relies on the integrity of braces and their correct erection and dismantling. The following are key risk control measures to incorporate into your safety procedures for the temporary bracing of concrete tilt-up panels:

- Before starting construction work, an engineer with experience in concrete tilt-up panels should prepare a design of the temporary bracing system to be used, including:
  - any required design changes for the panel or floor due to the brace connection points
  - specifying the braces to be used and the configuration – eg length, number per panel, whether knee braces are to be used and any cross bracing required
  - the temporary bracing layout – eg connection locations to the floor and panels
  - the specifications for the anchors
  - the proposed erection and dismantling sequence, including at what stage the bracing may be dismantled.

This information should be included on the shop drawings, available on site and used as the basis of the safe work method statement of the erection crew.

- Provide a system to verify that the required braces are installed to the specifications of the drawings prior to releasing the panel from the crane.
- If site conditions prevent the braces from being installed in the positions shown on the shop drawings, or any other changes are proposed, review the design and obtain an engineer's written approval for an alternative location (and any associated changes necessary, such as larger braces and higher-capacity base fixing) before erecting the panels.
- Regularly inspect the braces and bracing inserts, fixings and connections for damage or loosened connections.
- A competent person should inspect and verify that all permanent structural members and brackets have been attached to the panels as per the engineer's written instructions, prior to removing temporary bracing.

## FURTHER INFORMATION

- National code of practice: *Precast, Tilt-up and concrete elements in building construction*, Safe Work Australia
- Australian Standard 3850 – 2003 *Tilt-up concrete construction*
- *Tilt-panel & steel erection checklist for builders and building trades contractors*, WorkSafe Victoria
- Safety and health alert 13/00 *Fake bolts in tilt-up panels*, WorkSafe WA
- Safety and health alert 04/99 *Tilt-up panel falls over*, WorkSafe WA

For specific advice, go to [www.workcover.nsw.gov.au](http://www.workcover.nsw.gov.au) or call **13 10 50**.

#### **Disclaimer**

This publication may contain occupational health and safety and workers compensation information. It may include some of your obligations under the various legislations that WorkCover NSW administers. To ensure you comply with your legal obligations you must refer to the appropriate legislation.

Information on the latest laws can be checked by visiting the NSW legislation website ([www.legislation.nsw.gov.au](http://www.legislation.nsw.gov.au)) or by contacting the free hotline service on 02 9321 3333.

This publication does not represent a comprehensive statement of the law as it applies to particular problems or to individuals or as a substitute for legal advice. You should seek independent legal advice if you need assistance on the application of the law to your situation.

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**WorkCover NSW** 92-100 Donnison Street Gosford NSW 2250  
Locked Bag 2906 Lisarow NSW 2252 WorkCover Assistance Service **13 10 50**  
Website [www.workcover.nsw.gov.au](http://www.workcover.nsw.gov.au)

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