

TILT-UP AND PRE-CAST CONSTRUCTION

Facilitator Guide



Timings	Facilitator Notes	Resources
45 mins	Discuss learning outcome and assessment criteria	Slide 1 Slide 2
	EXPLAIN <i>Refer Student Notes – Construction work – tilt-up and pre-cast concrete</i> Explain that tilt-up and pre-cast construction is often used for commercial factory unit construction, among many other types of buildings, as it is fast and economical. Explain what tilt-up and pre-cast construction is and that the concrete structures are constructed ahead of their intended use and erected as part of a structure by lifting them into their final position by crane. Highlight that WHS Regulation s291 defines high risk construction work as work involving the use of tilt-up or pre-cast concrete. High risk construction work must have a safe work method statement prepared.	Slide 3
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s2 Introduction</i> Briefly discuss legislative requirements and relevant Australian Standard. Discuss who has duties including; • PCBU • Officers • Workers Highlight to participants that the COP is very detailed and we will not be addressing all of the COP in this module.	Slide 4
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s5 Braces</i> Discuss the requirements for braces and their safe erection.	Slide 5

	DISCUSS <i>Refer Student Notes – Hazards associated with tilt-up and pre-cast concrete structures</i> <i>Refer Student Notes – Risks associated with tilt-up and pre-cast concrete structures</i> Discuss hazards and risks associated with tilt-up and pre-cast concrete structures	Slide 6
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s9 Engineer and verification issues</i> <i>Refer Tilt-up and pre-cast construction COP 2003 – Appendix A</i> Discuss engineer and verification issues and show participants Appendix A COP for an example samples of engineers certification letter	Slide 7
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s13 Work Systems</i> Discuss work systems including; • Exclusion zones for tilt-up panel erection • Lifting pre-cast elements over workers	Slide 8 Slide 9
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s15 Operation of plant near braces and panels</i> Discuss the operation of plant near braces and panels	Slide 10
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s16 Working at Height</i> Discuss working at height including: • EWPs (s16.1) • Scaffolding (s16.2) • Ladders (s16.3)	Slide 11
	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s17 Proximity to overhead powerlines</i> Discuss proximity to overhead powerlines	Slide 12

	DISCUSS <i>Refer Tilt-up and pre-cast construction COP 2003 – s18 Licensing Issues</i> Discuss licensing issues, including licenses required	Slide 13
	ACTIVITY Split participants into two groups and provide each group with a WHSQ Safety Alert: • Concrete wall panels • Precast wall panel failure Have participants provide ideas and examples of what was done incorrectly or what could have been improved upon. Note: this can be done as one group. ACTIVITY Have participants complete the STUDENT QUESTIONS	-

STUDENT QUESTIONS – TILT-UP AND PRE-CAST CONSTRUCTION

1. List four hazards related to the tilt-up and pre-cast construction:
 - site features such as slopes, holes etc.;
 - working near overhead power lines;
 - exposure to weather conditions;
 - working at heights;
 - working near mobile plant
 - hazardous manual tasks;
 - working with hazardous chemicals; and
 - traffic at or near the site
2. List two control measures could be implemented to eliminate or minimise the risk associated with working at heights for tilt-up and pre-cast construction.
 - Use an elevating work platform (EWP)
 - Use mobile scaffolding
3. List two control measures that could be implemented to eliminate or minimise the risk associated with working near power lines.
 - Use 'tiger tails' on powerline to act as a visual aid to prevent contact with power lines
 - Limiting devices to prevent the crane jib or load from entering the exclusion zone or warning the operator before the jib enters the exclusion zone
 - Electronic proximity devices that audibly warn the crane operator when the minimum clearance distance is being approached.
4. List two control measures that could be implemented to eliminate or minimise the risk associated with mobile plant contacting the braces or panels.
 - The use of plant that reduces the risk of contact with panels or braces. Two examples are:
 - the use of mobile cranes that do not have to be located where slewing contact with a brace is possible, and
 - the use of boom type EWPs instead of scissor lifts (note: this may not always improve the situation).
 - Use a spotter to signal the plant operator to stop the plant in the event of any part of the plant approaching a brace or panel. Such a system would have to ensure that the communication method between the spotter and operator was effective and took into account factors such as noise on site and the spotter possibly being out of view of the operator.
 - Use of hazard tape, 'para-webbing' and/or signage to make the brace position obvious, particularly where access areas are located
5. What are two reasons why ladders could be unacceptable to use to remove braces from panels?
 - The possible need for the person on the ladder to support the end of the brace after it is unbolted and lowered to the ground. The person would have to step down the ladder with the end of the brace in one hand.
 - The height of the ladder would be excessive for larger panels creating significant risks for working from a ladder (i.e. the ladder would flex and be more difficult to secure).
6. List at least three activities in tilt-up and pre-cast construction that requires persons to work at height.
 - attaching the panels to one another or to structural steelwork prior to removal of the braces
 - attachment and removal of braces to and from panels
 - application of caulking to the vertical joints between panels
 - patching work.

7. What class of high risk work licence must the panel erection crew hold?
- Intermediate rigger (RI) or advanced rigger (RA)
8. List three types of documentation or certification that should be provided on site.
- Certification for the panel design for in-situ loading, wind loads and erection loads - (i.e. loads applied when panel is lifted off the casting bed).
 - Specifications for the concrete footings used to support concrete panels in their final position.
 - Drawings for the panel design, temporary bracing layout, final building layout and footing details. The drawings should be signed by an engineer or be accompanied by a certification letter that lists the panel drawings and drawing revision numbers.
 - Design certification for the temporary support system.
 - Any other instructions that may be required to ensure the safe erection and securing of the panels.

Version	Date	Author
1	30/06/2018	WHSQ