



Worker Safety and Concrete Formwork

Use and Re-use of Formwork: Safety Risks and Reliability Assessment

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Overview

Carpenters employed by concrete contractors spend much of their time assembling, erecting and dismantling the plywood forms for concrete pours, forms which are usually reused on subsequent projects. Researchers mapped out the work tasks involved, then used interviews with carpenters, as well as a review of OSHA case reports, to identify the work tasks entailing the highest risks. The team also tested plywood samples in the laboratory to test how well they retained strength after repeated use.

Key Findings

- Vertical concrete formwork has a life cycle including up to 18 steps, ranging from moving, stockpiling, and preparing materials to assembling and erecting formwork panels; panel loading (concrete pour); formwork stripping; visual inspection; cleaning; and dismantling/re-using.
- Carpenters identify formwork erection, stripping, and assembly as the most risky activities when working with concrete formwork. (Note: Concrete pouring and placing, which was not identified as especially hazardous by the carpenters, is usually performed by construction laborers rather than carpenters.)
- OSHA Fatality and Catastrophe Summaries suggest that concrete pouring, formwork erection, and formwork stripping are the most hazardous activities entailed in cast-in-place concrete work.
- The evidence did not suggest that re-use of formwork was a significant hazard. Lab tests from a limited sample did not show consistent loss of integrity and strength with reuse, and no cases of formwork failure were observed. Conservative design standards may account for this; further study is needed.

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See full report:

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