

Lake County Contractors Association

Safety News

June, 1998

Tilt-Up Construction -- A Safety Checklist

"Concrete Construction"

Attention to safety is important on any construction site. But when the work involves lifting and bracing heavy tilt-up concrete panels, special precautions are needed to ensure crew safety. Some of these precautions need to be taken even before panel construction begins.

The following safety checklist provided by the Tilt-Up Concrete Association (TCA) covers the entire tilt-up process, from pre-construction planning to postlift plumbing and bracing. Before sending your workers out on the job, make sure they're familiar with each of these guidelines.

Before panel construction

1. Select a crane with enough capacity to lift the heaviest panel plus the weight of the rigging gear. But don't base crane selection only on weight; also consider how far the crane must reach and how far the crane may have to travel with a panel.
2. Ensure that you have the proper subbase under the floor slab, since this slab will be the tilt-up panel casting area as well as a working surface. A slab is only as good as the subbase it's placed on.
3. If the crane will be stationed on the floor slab, check that the slab has enough strength to support the crane.
4. For each panel, obtain approved shop drawings showing all pertinent information. Also obtain a bracing manual with brace designs for the expected wind loads.
5. Always test the bond breaker before casting panels to verify that it's compatible with any curing or sealing compounds that may have been used on the floor slab.
6. Inspect the panel form work for dimensional accuracy and for proper placement of reinforcement, inserts, and embedded items.

Before erection day

- Perform a site inspection, looking for any underground hazards, overhead wires, rough terrain, or soft subgrade that could interfere with crane travel. Note any hazardous areas, and make the necessary corrections.
- Remove all debris and obstacles from the work area.
- Rig the crane and verify that it's in good working condition.
- Check that all lifting inserts are properly located, strongbacks are properly installed, and the concrete has reached the required strength at lifting.
- Install entrance and exit ramps so the crane can be properly positioned on the floor slab. Don't allow the crane to exert its weight on the extreme edge of the slab.
- Make sure all blockouts are covered. If water gets under the floor slab, it can weaken the subgrade and the crane can crack the slab.
- Locate proper shim points on the footing to prevent overloading the footing prior to grouting under the panels. The project engineer can help you find these locations.

At the safety meeting

- Before lifting starts, hold a safety meeting to clearly define the function of each person on the lifting crew and ensure that all crew members understand their responsibilities.
- Instruct workers never to stand under a panel that's being tilted, between the crane and a panel, or on the blind side of a panel while the crane is transporting it. Identify the rigging foreman, and ensure that the foreman and the

crane operator know all the hand signals they will use to communicate with each other. Instruct all personnel that the only person who should signal the crane operator is the rigging foreman.

- Provide the crane operator with the weight of each tilt-up panel and the panel lifting sequence.
- Demonstrate to workers the proper use of the lifting and bracing hardware and any tools and equipment to be used.
- Instruct crew members never to reach their hands under a panel to adjust a shim or a bearing pad.
- Create a safety checklist and have all workers sign and check the list after the meeting has been conducted.

During the lift

- Don't lift panels when high winds can produce unsafe conditions.
- Clear personnel who aren't needed to lift the panel away from the lifting area.
- If possible, fully extend the crane's outriggers and use cribbing to spread the outrigger loading. If outriggers can't be fully extended, the crane's lifting capacity is reduced.
- Inspect all rigging gear before loading the inserts. The rigging must be properly aligned and free of snags, and the rigging configuration must match that shown in the erection manual.
- Carefully release panels using pry bars and wedges. A panel that's struck to the casting surface can increase loads to the lifting inserts and cause possible insert withdrawal.
- Do not use damaged or bent braces, lifting hardware, or bolts.
- Be sure that any strongbacks shown on the erection details are included on the panels.

After the lift

- Plumb panels as close as possible before attaching braces to the floor slab.
- Never release the crane load if the bracing does not appear adequate. If the bracing design calls for a support system of knee, lateral, end, or cross bracing, this support should be completely installed before the crane is released.
- If lateral and end bracing can't be installed with the panel load still on the crane, then complete this bracing by the time the next panel in the lifting schedule is erected.
- At the beginning and the end of the work day, check that all bracing inserts are tight and have not worked loose. Maintain a daily torque log on brace insert tightening.
- If possible, grout under all erected panels before the end of the work day.
- Don't remove any braces until all structural connections are completed and the lateral resistive system is in place. The structural engineer can help you determine if it's safe to remove panel braces.

Safety Vests For Flaggers

According to the AGC of Illinois, the Illinois Department of Transportation has announced that effective May 26, 1998, the Special Provision which requires that flagger vests be "strong yellow/green" will be changed to allow either the customary orange vests or the new yellow/green.

There appears to be a wide variety of materials used for the new vest and some have better visibility than others. Some Districts have forwarded comments from flaggers that motorists complain it is hard to see the yellow/green vests. IDOT believes that part of the problem is the mesh material the vest is made of and the garment that is worn under the vest. Yellow/green seems much more visible when worn over a dark colored shirt.

Safety News is published by the Lake County Contractors Association's Safety Committee, 1312 Washington St., Waukegan, IL – Mike Barnhart, chairman, Gary L. Dowty, executive vice president. Many articles are submitted for publication and while every effort is made to assure the accuracy of the information, LCCA cannot be held liable for any information presented.