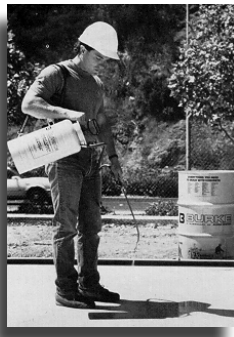

Safety Checklist For Tilt-up Concrete Construction



① Prior to Construction:

- ◆ Hire an erection subcontractor and crew experienced in the handling of tilt-up panels.
- ◆ Select a crane with a capacity capable of lifting the heaviest panel plus the weight of the rigging gear. Crane selection will not only be based upon weight but also how far the crane must reach and how far the crane may have to travel with the panel.
- ◆ The panel contractor should obtain, from the erection subcontractor, documentation attesting to the crane's certification and certification of insurance.
- ◆ Insure that you have a proper subbase under the floor slab. This will be the casting area as well as a working surface. The slab is only as good as the subbase upon which it is placed.
- ◆ If the crane will be on the floor slab, check the floor slab for adequate strength to support the crane.
- ◆ Obtain a properly designed and detailed tilt-up package stamped by a registered professional engineer.
- ◆ Obtain a bracing manual with braces designed for the proper wind loads.
- ◆ Obtain approved shop drawings for each panel showing all pertinent information.
- ◆ Develop a panel casting and erection sequence.
- ◆ Always test the bondbreaker prior to casting any panels. Verify that the bondbreaker is compatible with any curing or sealing compounds that may have been used on the floor slab.
- ◆ Inspect the panel formwork for proper placing of reinforcing, inserts, embedded items, and dimensional accuracy.



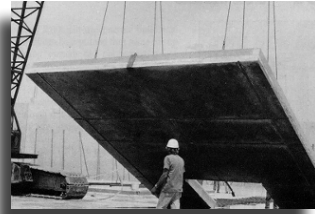
Test the Bond Breaker

② Prior to Erection Day:

- ◆ Perform a site inspection. Look for any underground hazards, overhead wires, rough terrain, or soft subgrade on which the crane will travel. Make notations of any corrections which need to be made or any hazardous areas.
 - ◆ Rig the crane prior to the date erection is to start.
 - ◆ The panel contractor should verify that the crane is in good working condition.
 - ◆ Are all the lifting inserts properly located, strong backs properly installed, and concrete strength required at lifting been attained? This information should be noted in the erection manual.
 - ◆ Install entrance and exit ramps for the crane to position itself onto the floor slab. Do not allow the crane to exert its weight on the extreme edge of any portion of the slab.
 - ◆ Check to make sure all the blockouts are covered. If water gets under the slab, it could weaken the subgrade and the crane might crack the slab.
 - ◆ Itemize the equipment required for a proper and safe lift. Insure that the tools and equipment are well maintained.
 - ◆ Identify erection sub-contractor's crew. A minimum crew should consist of the crane operator, rigger foreman, two journeymen riggers, and welders if required.
 - ◆ Provide a clean working area with all debris and obstacles removed.
 - ◆ Locate proper shim points on the footing to prevent overloading the footing prior to grouting under the panels. The engineer of record can help you with these locations.
 - ◆ Hold a safety meeting before any lifting starts!
 - ◆ Ensure that each member of the crew understands their position and responsibility that goes with it.
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③ At The Safety Meeting:

- ◆ Create a safety checklist and have all crew members sign and check the list after the safety meeting has been conducted.
- ◆ Instruct personnel never to place themselves under a panel while it is being tilted, on the blind side of the panel while the crane is traveling with it, or between the crane and the panel.
- ◆ At the jobsite, do not allow horseplay or unnecessary talking.
- ◆ Instruct personnel to remain alert at all times and to look out for fellow workers.
- ◆ While on the jobsite, proper attire should be worn at all times. (i.e. hardhats, shoes etc.)
- ◆ Address all fall protection requirements.
- ◆ Identify the rigging foreman. Insure that the rigging foreman and the crane operator know all the hand signals that they will be using to communicate with each other. Instruct the other personnel that the only person that should signal the crane operator is the rigging foreman.
- ◆ Clearly define the function and responsibility of each person on the lifting crew.
- ◆ Demonstrate the use of the lifting hardware, bracing hardware, and proper use of any tools and equipment that are to be used.
- ◆ Instruct crew members never to reach their hands under a panel to adjust a shim or a bearing pad.
- ◆ Provide crane operator with weights of individual panels and instruct him on lifting sequence.



Never Stand Under A Panel



Pre-Lift Safety Meeting

④ During The Lift:

- ◆ Provide a clean working area with all debris and obstacles removed.
- ◆ Do not lift panels when wind conditions would produce unsafe conditions during a lift.
- ◆ Personnel not involved with the panel lifting procedure should be clear of the lifting area.
- ◆ If at all possible, fully extend outriggers and use cribbing to spread the outrigger loading. If outriggers cannot be fully extended, then the crane capacities must be reduced.
- ◆ Inspect all rigging gear prior to loading the inserts. Rigging gear must be properly aligned and free of snags.
- ◆ Make certain that the rigging configuration matches that shown in the erection manual.
- ◆ Check to be sure that braces will not be trapped by the rigging once the panel is in its final position.
- ◆ Be alert for panels that may be stuck to the casting surface. Loads to the lifting inserts may be twice than designed for causing possible insert withdrawal.
- ◆ Carefully release the panel, by using pry bars and wedges.
- ◆ If you must walk a panel, be alert to all obstacles in the path of the crane and the crew.
- ◆ Take extra precautions when lifting panels with special shapes or special rigging.
- ◆ Do not use any damaged or bent braces, lifting hardware or bolts.
- ◆ Make certain that any strong backs shown on the erection details are included on the panels.



Setting A Panel

⑤ After The Lift:

- ◆ Be alert when plumbing panels to their final upright position. Make sure that the panel being plumbed does not strike another previously erected panel.
- ◆ Plumb panels as close as possible prior to 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, it should be completely installed prior to releasing the crane load.
- ◆ If the lateral and end bracing cannot be installed with the panel load still on the crane, then the completion of this bracing must not be further than one panel behind the lifting schedule.
- ◆ All bracing should be installed on all erected panels at the end of the work day.
- ◆ At the beginning and end of the work day check all brace inserts to insure that they are tight and have not worked loose throughout the night or day.
- ◆ Maintain a daily torque log on brace insert tightening.
- ◆ If at all possible, grout under all erected panels prior to the end of the work day.
- ◆ Do not remove any braces until all the structural connections are completed and the lateral resistive system is in place and completed. The structural engineer of record can help you determine if it is safe to remove any or all of the panel braces.
- ◆ Be careful when backfilling the pour strip so that you do not exert excessive pressure on the tilt-up panel.



Check Brace Inserts Daily



Lifting A Panel



Lifting A Panel



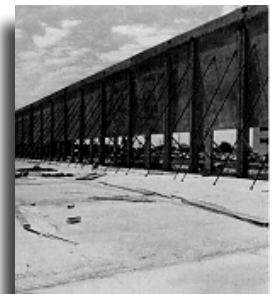
Placing A Panel



Bracing A Panel



Bracing A Panel



Lift Completed

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