

COLLECTIVE POSITION ON SLAB DESIGN FOR BRACE LOADS

Published by the Tilt-Up Concrete Association

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DESIGNING SLABS FOR BRACING - WHO IS RESPONSIBLE?

The Tilt-Up Concrete Association (TCA) – a non-profit international organization that serves to expand and improve the use of tilt-up as the preferred building system – has released a position statement assigning responsibility for the assessment of floor slab capacity for the bracing of tilt-up panels.

The statement is intended to provide clarity and direction on an important – and currently under-addressed – area of jobsite safety. The Occupational Safety and Health Administration (OSHA) requires that tilt-up concrete panels be temporarily braced to prevent panels from overturning or collapsing during the construction of a tilt-up structure (Title 29, Code of Federal Regulations, Standard 1926.704) However, OSHA does not specify how to prevent tilt-up wall panels from overturning or collapsing. While the TCA previously developed a temporary bracing guideline for use by the tilt-up construction industry that addresses the parameters by which the bracing scheme should be designed, the guideline does not assign responsibility. The supplementary statement now released by the TCA is as follows:

The Owner’s designated representative for construction shall be responsible for assigning a qualified firm to review the floor slab capacity for the bracing of the tilt-up panels in accordance to the latest edition of the TCA bracing guidelines.

“This discussion has been going on within the industry for years,” said Barclay Gebel,

Chair of the TCA Safety Committee. “You get into these situations where everyone starts pointing fingers and balls get dropped.”

Because tilt-up construction is a rapidly developing industry, engineering and jobsite practices must continue to adapt.

“The TCA is composed of architects, engineers, contractors, developers and suppliers. We are uniquely equipped to address these types of issues,” said Mitch Bloomquist, Managing Director for the TCA. “We often stress that tilt-up is a system; therefore, design/construction decisions have implications across the board. The greatest efficiencies are realized with this in mind. More important, the project is safest with this in mind before, during and after construction.”

It is widely accepted that the engineer performing the lifting and bracing design is responsible for the sizing, placement and connection of the braces. However, the design of the concrete slab (to which the braces are anchored) to accept these temporary loads does not fall under specific ownership. Tilt-up wall panels continue to be designed taller and wider than ever before, so the surface area per wall panel for accepting wind pressure also grows and this makes temporary brace forces larger. These issues are further exacerbated at corner conditions where braces from multiple panels share slab space.

“There are many variables to consider when reviewing slab thickness design for bracing,” said Matthew Bell, P.E., P. Eng., Chair of the TCA Technical Committee. “One must consider joint locations, fill-in slab areas and in general the available slab which can be accounted for to resist brace forces.”

“Every project is unique,” said Gebel. “The point is simply that it needs addressing. It’s imperative to identify who is responsible for this issue so that it is addressed properly. It is a matter of life safety and nothing could possibly be more critical.”

The “TCA Guideline for Temporary Wind Bracing of Tilt-Up Concrete Panels During Construction” can be purchased online at www.tilt-up.org/resources.

Want to know more? Contact TCA’s Manager for Regulatory and Technical Affairs, Jim Baty at 319-895-6911 or by email at jbaty@tilt-up.org. The mission of the Tilt-Up Concrete Association is to expand and improve the use of tilt-up as the preferred building system by providing education and resources that enhance quality and performance. More information can be found at the association website, www.tilt-up.org.