



Structural Collapse during Construction

How Should the SER Respond?

By Jeremy L. Achter, S.E., LEED AP

Structural Engineers of Record (SER) should all be well trained by insurance providers and legal professionals to avoid the realm of means and methods of construction – that sometimes grey area where the contractor is responsible for temporarily supporting partially erected structural elements even though they may not fully understand the statics of force transfer, temporary construction loads, and effects of environmental loads that may occur. To further clarify responsibility, the construction documents usually include verbiage to indicate that the contractor shall be responsible for providing adequate temporary shoring and bracing until the entire structural system is complete.

However, there may come a time when you are called to a project site to assess the damage caused by a partial or full structural collapse that occurred during construction. The collapse could be attributed to one of many factors.

Defining the Scope and Doing the Assessment

Before visiting the site, it is important to protect yourself and your firm. Depending on the specific situation, you are probably not completing this assessment pro bono or as part of your original scope of services. If this is the case, you should negotiate a change in scope for the additional work and track all time and expenses separately. Your insurance carrier likely has an example contract to use in this situation.

Time is of the essence. Every day the site is down, the overall project schedule is threatened. The contractor may shut down the site, or a portion of it, until a report is completed that assesses the situation. The report may be completed by the SER or the builder's insurance carrier, or both. You should only go to the site after your client, the contractor, and the owner agree on your purpose and role at the site. Once this groundwork is complete, get to the site as soon as possible and complete the assessment expeditiously before any contamination of the evidence occurs.

To exercise your due diligence, walk the site with a set of plans while accompanied by the job site superintendent or their designated representative. Make your intentions and

scope limitations clear and do not deviate from them. Depending on the agreement with your client, your only responsibility may be to help the contractor determine what elements are salvageable, repairable, or need to be replaced. Assessing remaining shoring or temporary shoring of the collapse may be outside your scope of work and may open the door to increased liability. If the contractor is making an insurance claim, their insurance carrier will likely have a representative come to the site to complete an assessment similar to yours. This should not affect what you are doing; it is just something to be aware of.

While on site, clearly indicate which elements appear to be damaged by highlighting beams, columns, or any other damaged element on a set of plans. Make notes and take pictures of the damage. In a multi-story structure, upper-level framing may be damaged beyond repair but framing below that level might be okay to remain in place. For example, if an upper-story column has buckled, try to determine if the damage extends to the framing or connections below. If no damage is visible in the framing or connections below, a new column may be able to be spliced just above the floor line. If testing is required to assess a weld that you suspect may be compromised, indicate this in your report so a testing agency can be hired as soon as possible.

When assessing a failure, it is essential to follow the load path through the members and connections. When a connection has failed, a closer observation may reveal that failure transferred unexpected moments into the column. In these cases, check the plumbness and straightness of the column. Also, consider what damage might have occurred to unseen structural like elements like base plates and footings. Finally, consider what type of repairs might be needed. Is a repair feasible or more economical than full replacement?

Dealing with the Media

Dealing with the media is another aspect that may need to be considered. While the following is not legal advice or a legal opinion, and

every situation is different, it is suggested that the engineer not talk to the media, especially if an investigation will be on-going. While it may seem harmless, your comments may incriminate you or jeopardize your firm's access to insurance coverage. You should also be careful not to incriminate others, as that might be seen as slander.

If the building official contacts you, you should cooperate with their investigation and answer their questions. However, it is best to verify the identity of the person who is contacting you. There have been cases where a builder contacted the design professional acting as a building official and obtained information that eventually led to the engineer being sued. Also, if you suspect that the collapse was a result of a design flaw, refrain from commenting and discussing the situation with anyone other than your insurer and lawyer.

Learn Something

A partial or complete collapse during construction can be devastating, but don't forget that it can also be a learning opportunity. In the middle of this unfortunate circumstance, look for opportunities to learn and improve.

Prepare

Preparing in advance for the possibility of a collapse on your project may be a wise consideration for every SER and every consulting office. Considering that potential liability issues are involved, it may be well to receive recommendations and training from your firm's insurer. They may have training materials and a list of specific do's and don'ts related to these situations that the SER should be aware of. Any efforts of any type related to dealing with a collapse should be coordinated through a designated individual/official in the firm to maintain consistency and protect the firm's interests. ■

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