



Develop a Risk Management Plan
By Corey M. Matsuoka, P.E., Chair CASE Executive Committee

Structural engineers are a weird bunch. The vast majority of them are comfortable determining the forces and moments on an indeterminate structure. This, by the very definition of “indeterminate,” shouldn’t be possible. And yet, structural engineers find a way to do it. The more complicated and intricate a project is, the bigger the challenge and the more excited we get. However, sometimes we get so excited that we forget about the risks associated with that project. After all, engineers are generally an optimistic bunch – what could go wrong?

Unfortunately, structural engineering is a fairly risky business. Structural engineers have the highest claims-to-revenue ratio among practitioners in the Architectural/Engineering field. This is not to say that structural engineers have the most claims against them. On the contrary, they do not. What they do have is the highest dollar amount per claim among all architects and engineers. If you think about it, when a structure fails, there are significant consequences. We are talking about significant property damage and threats to life safety. So what do we do about this?

One answer is for every project to have a risk management plan. Wikipedia defines risk management as the “identification, assessment, and prioritization of risk followed by coordinated and economical application of resources to minimize, monitor, and control the probability and impact of unfortunate events or to maximize the realization of opportunities.” Through experience (i.e., getting burned a few times), seasoned engineers and project managers can do this intuitively. For everyone else, a conscious effort should be made to practice risk management. One way this is accomplished is through the process of creating a risk management plan for each project. For smaller, less complicated projects, the risk management plan can be simple and informal. However, for larger, more complicated projects, a formal plan should be written down and shared with the entire project team.

A good risk management plan should contain an analysis of potential risks as well as a strategy to mitigate those risks should they manifest themselves. The first step in the development of a risk management plan is to identify the risks. A risk is defined as an uncertain event or condition that, if it occurs, has a positive or negative effect

on at least one project objective (Project Management Institute). The project team should determine which risks might affect the project and document their characteristics. The characteristics of risks could include root causes, risk category, and risk triggers (early warning signs that the risk will occur).

The second step in the development of a risk management plan is to qualitatively and/or quantitatively analyze each risk. In this process, the design team assesses the probability of occurrence

and impact for each risk. The design team can also organize the risks by category, timeline (how soon a risk is expected), etc.

Those risks with a high probability of occurrence or high impact to the project are deemed a significant risk and are forwarded to step three of the risk management plan: risk response planning. In this section, a response plan is developed for every significant risk. For negative risks, these response plans fall in one of four categories:

- **Avoidance:** Change the project to eliminate the threat posed by an adverse risk.
- **Transference:** Shift the negative impact of a threat, along with the ownership of the response, to a third party. This is often done financially through insurance contracts or operationally through outsourcing an activity.
- **Mitigation:** Reduce the probability and impacts of an adverse risk to an acceptable threshold through intermediate steps.
- **Accept:** Live with the possibility of a negative impact.

Developing response plans reduces the possibility of negative impacts to your project or prepares you to respond if they occur.

The final step in the risk management plan is to monitor and control the risk. Be on the lookout for risk triggers and review the plan regularly to recognize and acknowledge new risks or modify previously identified ones. The risk management plan should be a living document that is revised as the project moves forward.

To summarize, a formal or informal risk management plan should be developed for every project. The plan should also be updated as more information is learned. The process of creating a plan is:

- 1) Identify risks
- 2) Qualitative and/or quantitative risk analysis
- 3) Risk response plans
- 4) Monitor and control

To learn more about Risk Management, attend our 2017 CASE Risk Management Seminar: *Time-Tested Techniques for Managing Your Firm’s Risk*. It will be a full day program on August 4, 2017, in Chicago, Illinois. Sessions are geared toward project managers to principles and include the always popular Professional Liability Case Studies. We also couldn’t be happier, as the session kicks off the night before with dinner speaker Ashraf Habibullah, President of Computers and Structures, Inc. (CSI).

For more detailed information about the sessions and how to sign up, contact Katie Goodman at KGoodman@acec.org or visit www.acec.org/education/seminars. For more information about risk management plans and other resources for claims prevention, visit the CASE website at www.acec.org/CASE.

By all means, keep finding definition in indeterminate frames. It is what makes the project challenging and exciting, but remember to mitigate the risks that come with it. ■



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