Risk Management: Elements and Tools

By R. John Aniol, P.E., S.E.

Managing risks – from project initiation through construction completion – is critical to achieving project success and maintaining key client relationships. The Council of American Structural Engineers' (CASE) vision is to be the leading provider of risk management and business practice resources within the structural engineering profession by improving quality, enhancing management practices and reducing professional liability.

To assist structural engineering firms in reducing risk, CASE developed the Ten Foundations for Risk Management. The first five foundations pertain to business practices, while the last five pertain to project management items.

1 – Culture

Create a culture of managing risk and preventing claims: Culture is difficult to define in an organization but is a key element of any firm's character, providing a basis for the decision-making process and operating procedures. To effectively cultivate culture, a firm must employ strategic planning (involving staff and clients), and commit to focus a substantial portion of the cultural effort on quality. High-quality client service is achieved when it is "built-in, not bolted on" and infused throughout an organization from the top-down. Producing high quality work will result in satisfied clients who provide opportunities for future business, reduced legal claims, more satisfied employees and higher profit margins.

2 – Prevention and Proactivity

Employ preventive techniques: CASE has recently released two tools to assist the design professional in developing risk prevention processes within the firm. CASE Tool 2-3, *Employee Evaluations*, is intended to assist the structural engineering office in the task of evaluating employee performance. The evaluations not only provide a method to assess employee performance, but also serve as an integral part of the company's risk management program.

Tool 2-4, *Risk Management Plan*, is a document to aid the project manager in implementing a comprehensive process that will identify risks, estimate the probability of occurrence and consequence of the risks, and create a proactive plan to mitigate the risks. The tool is divided into four sections: 1) Risk & Opportunity Identification: CASE Tool 2-1, *Risk Evaluation Checklist*, can be used to indentify risks. In addition, a list of sample risks is provided. 2) Risk & Opportunity Qualification/Quantification: A risk assessment matrix is used to determine the integrated risk assessment. 3) Risk Strategy; Risk and Opportunity Leveraging Plans: This plan can both identify proactive and reactive processes. 4) Risk Management Process: Includes kick-off meetings, risk management plan, coordination meetings and appraise and control. The Risk Management Plan is element three of Tool 3-4, *Project Work Plan Template*.

3 – Planning

Plan to be claim-free: Client evaluation, project type, staff hiring and retention, comprehensive training program and quality assurance all contribute to reducing risk. Prepare a project work plan to document project delivery strategies and communicate them to the project team members. CASE Tool 3-4, *Project Work Plan Template*, serves a guide for the project manager to develop the following elements of the work plan: project metrics, financial management plan, risk management plan, resource management plan, design management plan, documentation management plan, quality management plan, and construction phase management plan.

4 – Communication

Communicate to match expectations with perceptions: Understanding the client and owner's goals is the first step in effective communication, as proactive planning leads to seamless interaction. Communication must flow in both directions throughout the project team. Utilize communication tools including project status reports, meeting agendas, action item/coordination lists and design criteria document.

5 – Education

Educate all the players in the process: Effective training is the key element to success. Consider a comprehensive training program including leadership skills, project management skills and technical skills. Establish a mentoring program to enable seasoned staff to nurture the career development of less experienced staff. Ascertain owner's expectations about coordination and completeness of the contract documents, so risk can be understood.

6 – Scope

Develop and manage a clearly defined scope of services: A clearly defined scope establishes a firm's responsibilities (avoiding misunderstandings), serves as a basis for compensation and additional services, and should be used in the development of the project work plan. Discuss the scope of the work with the entire project staff, to ensure they have a full understanding of the required work – avoiding unnecessary work and identifying when additional services are appropriate.

7 – Compensation

Prepare and negotiate fees that allow for quality and profit: Adequate fees allow for adequate time to produce quality contract documents and models. Negotiate fees together with scope of services, so the client understands what is included in the basic services. Weigh contract fee versus risks to determine if the proposed fee is commensurate with scope, client, project type, complexity, schedule, delivery method and profit strategy.

8 – Contracts

Identify onerous contract language: A well-written, fair and complete contract can minimize risk. Review each contract for onerous provisions; refer to CASE Tool 8-1, *Contract Review*. It is preferred to use in-house standard contracts, or standard contracts prepared by CASE or AIA, as a starting point of negotiations. Review the prime agreement between your client and the owner. Consider negotiating a limitation

of liability appropriate for the scope and fee. Ensure that the terms of the contract are insurable under the firm's professional liability insurance. "For example, most insurance policies do not provide for the defense of an indemnitee, even though that term is often found in indemnity agreements. A good contract will recognize that professional services are being provided – not a product – and therefore perfection cannot be warranted by the service provider."

9 – Contract Documents

Produce quality contract documents: The contract documents and the model are the deliverables that communicate the design intent to the construction team. In an effort to raise the document quality bar, CASE recently released CASE Tool 9-2, *Quality Assurance Plan*, which provides guidance to the structural engineering professional for developing a comprehensive detailed Quality Assurance Plan. A well-developed and implemented Quality Assurance Plan ensures consistent high-quality service on all projects, and includes: 1) Quality Control Review, 2) Firm-wide Standards, and 3) Construction Quality Assurance.

The quality control review may consist of three elements: Design (Jury) Review, Engineering Review and Construction Document Review. Comprehensive firm-wide standards (consisting of design/analysis standards {guidelines}, documentation standards and construction administration standards) enable staff to gain historical firm-wide benefits while providing the resources to ensure the design and documentation are clear, concise, accurate and consistent.

In addition, CASE Tool 9-1, *A Guideline to Addressing Coordination and Completeness of Structural Construction Documents*, is a great reference tool for preparing quality construction documents.

10 – Construction Phase

Provide services to complete the risk management process: Construction quality assurance is an important element of the quality assurance plan since it is the final step in the process (and is best performed by the staff responsible for the design). Develop preconstruction meeting agendas to proactively discuss and resolve key issues. Develop guidelines for replying to requests for information, including issuing sketches and maintaining an RFI log. Develop submittal review guidelines that outline the completeness of specific submittal review, including the use of the appropriate submittal review stamp and submittal log procedures. Develop guidelines for field observation and reporting procedures, and review of testing reports. Specify and request a submittal schedule to adequately allocate submittal review resources. Reply to RFIs and return submittals within the contractually-specified time to avoid a claim for a delay in the process. Review specifications for specified submittal components. Request specified yet incomplete submittal information promptly upon receipt of submittal. Establish a collaborative (non-adversarial) relationship with fabricators and contractors in order to work together to achieve a successful completion of the project.

Summary

By focusing on the recommendations of the CASE Ten Foundations of Risk Management, firms will achieve successful project completion through reduced professional liability; in turn, increased firm viability will enable the firm to enjoy the benefits of a higher-quality client experience.

CASE has developed more than 16 standard agreements, more than 10 guidelines/commentaries and more than 20 tools. A complete list of all the CASE Contracts, Guidelines and Tools can be found at **www.acec.org/case**. For more information regarding specifics of CASE tools contact Stacy Bartoletti, Toolkit Committee Chair, **sbartoletti@degenkolb.com**. All tools are free for CASE member firms. Tools are also available to non-member firms for nominal fees. If you are interested in joining CASE, refer to the web-site or contact Heather Talbert, **htalbert@acec.org**.▪

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Also see: Douglas Ashcraft, P.E., S.E., *Foundations for Risk Management*, STRUCTURE magazine, August 2005, p. 41-42.