

## **Engineering-It's a Risky Business**

By Deborah Ducote Keller, P.E.

As I approach my 40<sup>th</sup> year practicing engineering, which in my opinion is both an art and a science, I find myself reflecting on the \$ 1 billion worth of projects I have participated in so far in my career.

Typically from that first meeting from which a project is born comes the question, "Can we do this?"

I have learned that if there is a commitment to put enough time, money, and people into a project, then the answer will always be a resounding, "Yes!"

But I have never had the honor of working on any project team where resources were unlimited. Those initial project meetings usually involve a plethora of non-engineers, non-project managers, and the project owner, who you may work for as an employee or as the consultant.

The one objective shared by everyone in the initial meeting is to have the project come in on schedule, within budget, and with exceptional quality. Fast, hot, and cheap is good enough only for buying a pizza.

Every project has risks, and those risks ultimately will be placed on the engineer and/or contractor. Much of contract language is not to the benefit of the engineers and contractors. However, the seasoned professionals in engineering and construction values assessing a project's risk factors from the start. It can earn you a nickname like "Debbie Downer" when you start listing highly likely threats that will impact schedule, budget, and quality. That's the duty of engineering project managers.

I recently came across a blog by Anna Mar in which she lists 130 Project Risks. Obviously, this global business executive has a wealth of experience herself or a lot of cohorts that share their woes. Maybe it's both. See the reference herein to read the whole list.

The risks are grouped in the blog, but I renamed the types of threats to a successful project for this article:

Lack of Executive Support and Engagement

Budget Mismanagement

Change Mismanagement

Stakeholder Sabotage

Miscommunication

Lack of Required Resources

Convoluting Contract Process

Inadequate Design and Wrong Assumptions

Incompatible Technology

Decision Paralysis

Resolve to not Resolve

Difficult Procurement Process

Approval Red Tape (excessive bureaucracy)

Dysfunctional Organization

External Events

Project Mismanagement

Owner Rejection of Acceptance

## Litigation

So, realizing all these threats, how do I as a senior project manager approach risk management on my project?

First, I recognize that many risks cannot be foreseen, managed, nor prevented, but they can be planned as a likely threat. I recommend not bidding projects in August and September in coastal Louisiana during peak hurricane season. Likewise, a project schedule should avoid pile driving and deep excavations during high river season along the Mississippi River.

Second, I establish who the person with the authority and responsibility and accountability to act on behalf of the owner. As a consultant, I may be the project's manager, but I have to take direction from a person with legal authority who represents the interests of the owner. If it's a committee, the project is in trouble because usually this means everyone thinks they are in charge and everyone thinks they can avoid being held responsible. Where this person lies on the organizational chart will show you how much or little engagement there will be from the executive at the top.

Third, learn the Serenity Prayer so you can accept the things that cannot change. Permitting, whether local or state or federal, is a bureaucratic process. Plan for lengthy reviews so that the project schedule can only be shortened if the permit process goes smoothly and quickly.

Fourth, remember that anybody can sue anyone for anything. Winning or losing depends often upon the party that has the best documentation of the project, including the emails, the conversations, the photographs, the videos, the formal letters, the notes and electronic files, drawings and specifications, etc. Include dates, times, places, names involved,

who they work for, etc., as well as the person who performed the work.

Lastly, never compromise your ethics and principles. Whether your cost estimate, or project schedule, or advice is not what the owner wants to hear, stay true to what you know to be your professional opinion and recommendation. If owners want project managers who will give them only optimistic forecasts, conceal problems, and avoid conflict, they can find them, but most likely it won't be people with P.E. behind their name.

Reference: [www.Simplicable.com](http://www.Simplicable.com), June 28, 2016, 130 Project Risks, Ana Mar

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