My Two Bits

Smith is unlucky. On every other project he develops, he spends about $100,000 more than budgeted, because of unanticipated conditions, delays, claims, disputes, and litigation. After ten years of that, he finally wises up: He adds $50,000 to the "Miscellaneous" expense line of every project budget, figuring that $50,000 is the average per-project cost of dealing with what he otherwise wouldn't budget for.

In fact, that $50,000 is the cost of risk. It's a matter of considering the various risk factors associated with a given situation, determining how much of a loss they could cause, and then multiplying that sum by the likelihood of the risk materializing. In Smith's case, given that he has a 50% chance of losing $100,000 on every other project, the cost of risk is ($100,000 ÷ 2 =) $50,000 on every project.

Now suppose, for the sake of discussion, that Smith gets tired of allocating a $50,000 risk to every project, so he decides to experiment. For purposes of comparison, he develops one project as usual, doing his best to minimize short-term costs. He retains the cheapest design professionals he can find, and then, as usual, adds a $50,000 risk allowance to the overall budget. Then he pursues an almost identical project in a wholly different manner, focusing on long-term costs. He selects his design professionals with great care, based on quality in addition to fee, and encourages each to propose an effective scope of service. What's the potential cost of loss on the second type of project? $100,000 is a good number to go with, because that's close to the price of wriggling out of even the simplest lawsuit. But what's the likelihood of such a quality-oriented project losing that sum? One out of every two times? Not likely. Maybe one out of every 10 projects, let's say, lowering the risk cost per project to ($100,000 ÷ 10 =) $10,000 and freeing up $40,000 to pay for better design professional procurement and better scopes. The real cost of quality? In this hypothetical example, nothing. And in "the real world"? Based on everything I know, and considering my biases, I'd have to say less than zero. But still, "quality construction" too often remains an oxymoron.

The cause of the problem – the real villain in all of this – is human nature and, in particular, optimism. "I know that my lousy procurement procedures result in major losses half the time," Smith must think to himself, "but maybe this time it will be different." It's just that kind of foolish thinking that accounts for the success of Las Vegas, a fantastic city financed by its patrons' losses and their absurd belief that, "even though the odds are against me, maybe this time it will be different." And if it is, the notion that "I can win at this" will be reinforced, encouraging the same behavior next time, and – no surprise – a loss. (All this is explained by B. F. Skinner's theories of variable operant conditioning, which state that the more an animal (e.g., rat or human) engages in a certain behavior ("operant"), the more likely it is that the next such engagement will result in a prize (e.g., food pellet or jackpot).)

Suppose, for the sake of discussion, Smith says, "I guess one of my problems could be that I make all the quality assurance companies – the construction materials engineering and testing (CoMET) firms – bid for the assignment. By bidding, I encourage them to recommend the cheapest, skimpiest scope they can live with, and assign their least costly personnel using the oldest equipment and methods." Therefore, to calculate the real cost of the CoMET firm's services, Smith would have to adjust all bids by risk cost. For example, if "Konstruction Kwality Associates" submits a low bid of, say, $50,000, the real cost of its service may be $60,000 or more, given that the inferiority of KKA's services costs its clients an average $10,000 more than bid on every project.

Now consider ARQAA – Anal Retentive Quality Assurance Associates – which will submit a bid about 15% more than KKA's, given the better scope it proposes to apply, and its better personnel, equipment, and methods. Its bid would be $57,500, with a risk cost of somewhere in the neighborhood of $2,000, thus making the real cost of its services about $500 *less* than KKA's, not $7,500 more.

Because you are reading this column, you more than likely are intelligent and, therefore, get my point. And if you do, agreeing with it is not enough. If you agree, you need to educate others, because – from where I sit – they really need it. They cling to the foolish

notion that, because they got away with "doing it on the cheap" once, they can do it again and again, experience, facts, and Las Vegas notwithstanding.

There's nothing wrong about wanting to pay the lowest possible price. But you have to be able to know what that is. To accept a bid or price quote without considering the cost of risk assumes there is none, and that's just plain stupid.

Does that mean that a firm's bid price should be adjusted according to its track record? Of course it does! Face it: If you deal with the worst of the worst, you're likely to pay an amount far more than what you'd have to pay by dealing with the best of the best. But as obvious as that may be, how many owners don't seem to get it. And how many architects, structural engineers, and civil engineers don't seem to get it, or do get it, but decide to shirk their professional responsibilities by saying nothing or, worse, by pandering to an individuals' reasonable desire to save money by encouraging behavior architects, structural engineers, and civil engineers know – or ceretainly should know – to be counterproductive, and more expensive rather than less?

Message short and sweet: Risk is real and imposes a cost on every party involved in every project. When you consider what risk can cost – based on historically what it actually has cost – almost invariably wise people realize that the cheapest engineering they can possibly get is the best engineering they can possibly find.