

From the Editor: Use Different Viewpoints to Uncover the Unknown Unknowns

April 2019, *Informed Infrastructure*

Mark,

I am a civil engineer with Eastham & Associates in Chesapeake, Ohio (located just across the Ohio River from Huntington, W.Va.). We have a substantial workload providing designs for stormwater management and floodplain analysis, both of which require a clear understanding of the potential impacts of climate change.

Although we are keenly aware of the varying views and political debates on the reasons for such changes, it is well-known fact that climate has been changing for eons and is certainly changing rapidly now as evidenced by recent climatic events.

I appreciate your recent comments in the current edition of *Informed Infrastructure*, especially the references to “always the way we have always done it,” “challenging assumptions” and “including ideas from different genders.” I see these as having a direct relationship to the needs for assuring our future designs and construction will end with a proper result.

Currently, we struggle with defining—much less accurately predicting—design parameters for the key items that relate to climate, but I imagine most engineers are willing to make educated guesses at reasonable parameters along with adding measures to deal with possible extreme events. This, however, is a place where we are dealing with Known-Unknowns (i.e., we know it’s happening, but don’t know the

extent or degree of the impacts). Further, we too often keep doing the same thing over and over. For example, the current common approach in determining rainfall intensities (e.g., inches per hour) is to accept current (often NOAA) data based on a statistical analysis of PAST rainfall events. Until we are able to

make a reasonable projection of FUTURE such events, we will always be behind the curve in defining appropriate projections for project designs, and that must accept the fact that our designs and construction activities are expected to provide resilient infrastructure for about 20 years in the future. Hopefully, the current trend toward the need for more thinking and studying to attain needed input from current climatic data will provide a greater opportunity to move closer to a “known” position.

Also, I would hope our upcoming millennial engineers would light a spark in our profession to move our unknowns to knowns. They will have different career objectives, more research data, better tools, more case studies, more knowledge of successes and failures, and a greater willingness to engage other disciplines (such as environmental, biological, social and economic aspects). The educational institutions also need to step up.

Thank you for your continuing input to our profession.

Sincerely,
Les Tinkham, P.E.
Senior Project Engineer
Eastham & Associates



ReEngineering The Engineer: Why Not Dream Big?

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Mr. Fitzpatrick, *Informed Infrastructure* is a must read for me, and I applaud your article in the April 2019 issue. Your message should serve as a call to arms for all of us in the design/construction field to think outside the box and ask “why not?” Further, I believe it should be applicable to those in positions to call the shots on how and when we can introduce innovative designs or procedures: for example, agency regulators who review our permit applications and/or the plant operators who prescribe and control who does what and which products are purchased, etc.

Many agency regulators provide rules, regulations and design parameters relying on design manuals that are either outdated or fail to recognize specific issues not directly related to the immediate purposes of the project. Their rules, however, dictate whether or not a permit is approved, thus either changing or delaying the project. Plant managers often refuse to accept changes in order to ensure their maintenance staff and equipment don’t need to be changed.

That said, it’s articles like yours and Mr. Scacco’s (left) that encourage the type of changes necessary to provide a different environment for preparing our future infrastructure. Keep up the good work.

Sincerely,
Les Tinkham, P.E.
Senior Project Engineer
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