

InfrastructureUSA

Guest on THE INFRA BLOG

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Conversation with Steve Anderson, Managing Director, InfrastructureUSA

National Academy of Engineering Video Contest

The video contest is fundamentally about influencing the public perception about engineering. Basically the public never has understood the value proposition for engineering. Engineering creates solutions serving the welfare of humanity and the needs of society. That's what engineering is all about, but most people don't see that right away. What this video competition is proposing for its contestants—essentially everybody is invited to participate—is to create a one-to-two-minute video which will demonstrate the nexus between engineering and the welfare of humanity and the needs of society anytime between 1964 and 2064; so fifty years in the past, fifty years in the future. There is a prize for these videos: the grand prize will be \$25,000 for the best video according to the criteria. Basically how interesting the video is and how well it projects this nexus between engineering, humanity, and society and how attractive it is to people, how it draws people to it. This is part of the larger message that the academy is proposing to help the public understand the value proposition of engineering. It's really an important issue. The videos actually have six categories of contestants that can get sub prizes: there are young students, primary school students from grades six to eight; there are high school students from grades nine to twelve; there are university and college students, generally from two-year colleges through graduate school; there are members of the academy itself; there are some Frontiers of Engineering students; and then the general public can participate in this. The grand prize for the best video is going to be \$25,000, then each of these six categories I mentioned earlier will have a best-in category prize that's \$5,000. There's also going to be a people's choice category for the most likes on YouTube of \$5,000. It's supposed to be a lot of fun, and it's supposed to be very instructive, and we hope to use these videos to help the public understand really what the value proposition is for engineering.

Engineering's Purpose is to Benefit Humanity

I don't think engineers have ever been good at explaining to the public what engineering is about. Even from my entire lifetime I can't remember a time when this has worked well. Most of the public thinks engineering is about things; it's not actually about things, it's actually about people and society. And this has been one of the confusions, that engineers have allowed the public to have this misconception, haven't spoken up to the fact that really engineering is about welfare of humanity and need to society. If you look at all the great engineering prizes in the world, they are all about humanity, they aren't about things. Now it turns out things are important, of course. You can't get there without the things, but they're the pathway, they're not the destination.

Where Did Our Engineers Go?

We have one of the smallest percentages of engineering graduates in our universities' graduating classes of any country in the world: 4% of our university bachelor graduates have engineering degrees. The world average is 13%. In East Asia the average is 23-26%, depending on what selection of countries you take; in Europe it's 13-15%; the U.S. it's 4%. We cannot succeed actually in our society and our security and maintain our standard of living with this small fraction of our young people going into engineering, because we are no longer going to be able to recruit talent from around the world as we have been doing in the last 50 years. The world is changing; there are lots of opportunities are out there. Countries that used to send so many of their talented people here to be engineers in the United States are going to retain them at home. There is actually a short supply of talent in the world. So the U.S. has to move to inspire more of our young people to be interested in engineering. I think one way to do that is to help them understand what the real value of engineering is. This is also true when we want to recruit more women into engineering and under-represented minorities who tend to be more interested on the whole in people and helping communities, helping society. So I think there are a lot of really important practical reasons why this is an idea that needs to get promulgated.

Acting Only After Disaster Strikes

We do it in Washington: we don't address the problems when we have them if we can delay addressing them. Any of the big infrastructure projects, or many of them, come following a crisis. Take the Bay Bridge collapse in San Francisco: we've got the new span there, it's a multibillion-dollar project, and it's just been opened. That never would have happened without the Loma Prieta earthquake that dropped the span on the upper deck of the Bay Bridge. That essentially called people's attention that this is an infrastructure project that needs to be taken care of now. You've got the levees after Hurricane Katrina in New Orleans. The levees weren't adequate; that was an infrastructure problem that was known beforehand, but ultimately it had to be taken care of. The idea of not serving infrastructure needs is endemic in our society. Take for example basic research at universities: nobody wants to fund it now because it's sometime in the future, it's not an urgent crisis seen at the moment. It's the old boiling the frog problem: You put the frog in cold water and turn the fire on, the frog's happy enough, and finally by the time the frog feels that it's too hot to survive it's already too late to get out of there. That's basically the decaying infrastructure problem. So I think this is a characteristic that is quite devastating, but I don't see what the answer's going to be because even when we see the problem and we see the problem is developing, the people are just not ready to respond until you get to a crisis that forces you to respond.

The National Academy of Engineers: Leading Our Future Technology

The National Academy of Engineers was founded under what we call today an "executive order" by Abraham Lincoln 150 years ago to provide counsel to government on any issue dealing with engineering and technology. It's one of three academies: the

Academy of Sciences, the Academy of Engineering, and the Institute of Medicine. It has about 2,000 members, who are elected among the most distinguished engineers in the country, and they are elected to provide counsel on policy to government and also to industry and to national issues. It's often considered the highest-level organization within the United States, and it works with other engineering organizations throughout our society and internationally. So it has a major responsibility to our country, essentially to its future, and to leading and advising on the development of engineering for the people and the society of our country. It's an organization that convenes expertise on technical topics. People want to undertake studies within the academy because of its standing and prestige, and it gives extremely reliable reports that are thoroughly referenced and researched and they are a-political, they just deal with technical knowledge. It is an organization that is highly reputed throughout the world and many companies and countries come here to understand the academy, how it works, so they can replicate similar organizations in their countries and organizations.

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