What it means to be an ENV SP

Infrastructure refers to any engineered solution that supports or is essential to the basic functions of a modern society. It is the backbone of the US economy and a necessary input to every economic output. Good performing infrastructure is critical to a nation's prosperity and the public's health, safety, and welfare.

Infrastructure conditions have a cascading impact on our nation's economy, impacting business productivity, gross domestic product, employment, personal income, and international competitiveness. Neglecting America's Infrastructure has cascading effects as shown in ASCE's 2016 Economic Study: Failure to Act, Closing the Infrastructure Investment Gap.

Much is discussed about infrastructure, especially as it pertains to the need for more resilient infrastructure. What does it mean to be resilient? Resilience is defined as the capacity to mitigate against significant, all hazards, risks, and incidents to expeditiously recover and reconstitute critical services with minimum damage to public safety, the economy, and national security. Obviously, resilience in this sense is of the upmost importance. It is no surprise that Harris County has formed a taskforce to ensure resilience is built into their recovery plans following Hurricane Harvey in 2017.

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ASCE's recent letter to Harris County spoke of resilience, "I believe the overarching theme to be Resilient Infrastructure is important, but general resilience is better. This is important because a broader definition of resilience typically considers many other shocks and stressors – not just flooding. For example, our community might be concerned with drought, chemical releases, explosions, hailstorms, and other shocks. Our community might also be concerned with slow moving disasters and other stresses, like the COVID-19 pandemic, sea level rise, aging infrastructure, or habitat loss."

I love this paragraph because it asks the agency to think of resilience in a much broader sense.
These are nudges towards sustainability principles, as well as resilient infrastructure.

Sustainability?... Why is sustainability important in a resilient infrastructure discussion? I assure you these two tenets are completely intertwined. You can not talk about Sustainability without looking at Resiliency. Let us see if we can define these terms a little better.

Defining Sustainability

Sustainability is a set of economic, environmental, and social conditions in which all of society has the capacity and opportunity to maintain and improve its quality of life indefinitely without degrading the quantity, quality or availability of economic, environmental and social resources.

True sustainability is found at the Triple Bottom Line: economic, environmental, and social.
This is sometimes called Planet, People Profit.
The economic dimension includes economic viability.
The environmental dimension includes the local flora, fauna, water, air, soil, and ecology.
The social dimension includes people, and their local culture, beliefs, and values.

Sustainable development is the application of these resources to enhance the safety welfare and quality of life for all of society. Developing sustainable infrastructure and making the case for it requires reimagining each step in the infrastructure process.

Pictures above: Technical Sales Presentation / InfraTex Consulting; Structural Inspection — Live Oak Brewery, Austin, TX; Legislative Fly-In — Tiffany Villarreal & ASCE Texas Executive Director Lindsay O'Leary in Washington, D.C.

To put it another way.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. And we cannot talk about sustainable development without including resilient infrastructure in the discussion.

SUSTAINABLE DEVELOPMENT

Storm Pipe Inspection —InfraTex Consulting

A Resilient Infrastructure system can accommodate a hazards related impacts and continue providing services, or limit service outage times, tolerable to the community's recovery efforts.

Implementing resilience requires all kinds and all types, not just engineers. It's important to talk about the basis for design in three categories: Growth - the need to provide new or expanded services, Aging Infrastructure - the need to repair or remove infrastructure, and Community Resilience - the need to address new risks.

Mitigating the risk is how we build resiliency into our infrastructure.

Civil Engineers should include a lifecycle of all hazard comprehensive risk assessment that considers event likelihood and consequence, encourages mitigation strategies, monitors outcomes, and addresses recovery and return to service.

The pictures above are provided through Canva.com

The balance between the built and natural environments and population trends in communities of all sizes, now and into the future, support research and development into innovative new material technologies and processes to modernize and extend the life of infrastructure. People making decisions on economics alone, typically call it the bottom line.

We must create performance criteria and uniform national standards that address inter-dependencies, establish a minimum performance goals for infrastructure, and incorporate system resiliency into the decision making process to achieve the goal of obtaining and maintaining a state of good repair for all infrastructure at the lowest lifecycle cost.

In discussion Resiliency, we must also understand the impact of the loss of infrastructure, the timeline, and costs to restore to its function following an extreme event. We can no longer afford to rebuild every infrastructure asset following a natural disaster, the cost is just too high.

By looking at infrastructure this way, we will have the opportunity to design and build these systems in a way that will promote sustainability and resilience far more effectively than has been done in the past.

What does it mean to be a Envision Sustainability Professional?

I have spent years building and growing my Sustainable Development muscles.
I have visited countless websites and read numerous articles, but only one resource has provided clear and concise directions on how to reach my goals. The Institute for Sustainable Infrastructure is where I started my journey towards becoming a Sustainable Development Professional. I began by learning about the Envision™ framework and testing to receive my ENV SP credential.

Envision™ is the product of a joint collaboration between Institute for Sustainable Infrastructure (ISI), which was founded by three national engineering associations: the American Society of Civil Engineers (ASCE), the American Council of Engineering Companies (ACEC), and American Public Works Association (APWA), and the Zofnass Program for Sustainable Infrastructure at Harvard University's Graduate School of Design.

The Envision sustainable infrastructure rating system is a comprehensive planning and design guide that helps infrastructure owners and designers meet sustainability goals and address projects' lifecycle economic, social, and environmental aspects. This tool can be used to guide decisions about investment of scarce resources and to address community and environmental priorities on all types of civil infrastructure.

Thanks to Envision, we now have the opportunity to design and build infrastructure systems in a way that will promote sustainability and resilience far more effectively than has been done in the past.
The future generations of consumers, citizens, government agencies, and engineers are going to demand infrastructure resilience AND sustainability in the coming decades.

We can either get on board or get left behind.

#Resilience #HazardMitigation #DidYouKnow #MakingACase #SustainableInfrastructure #ResilientInfrastructure #SustainableDevelopment #ENVSP #SustainOrExplain

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