We all understand that new infrastructure construction and upgrades to existing systems are vital to protecting the quality of life in our communities, not to mention supporting economic competitiveness and jobs in America. The American Society of Civil Engineers (ASCE) predicts that the cost of deferred maintenance alone on existing infrastructure systems in the United States could exceed $2.2 trillion.

Given the inevitable massive investment in infrastructure that the nation faces, it is timely that this year The Institute for Sustainable Infrastructure (ISI) launched a groundbreaking sustainability rating system for this type of construction. Called “Envision,” this rating tool is a move to do for infrastructure what the LEED rating system has done for buildings. ISI’s Envision rating system focuses on non-habitable infrastructure, which constitutes one-third of all new construction in the United States.

Much bigger than just green
Public owners are searching for guidelines and support to respond to the growing community demand for sustainability in infrastructure. Many civil engineering projects are delivered in a highly complex setting where the public interest must serve many masters. Unless all parts of the environmental/social/economic trilogy are successfully balanced and accepted, the likelihood that the proposed project will be completed is reduced. The new ISI rating system is designed to foster a necessary and dramatic improvement in the performance of physical infrastructure across the full dimension of sustainability — taking into account not just environmental factors, but economic and social factors as well.

Envision’s intent is to initiate a systemic change to improve not only project performance, but the mindsets of designers, project owners, and decision-makers, to transform the way infrastructure is designed, built, and operated. It is this broader recognition of multiple purposes, goals, and outcomes that inspired the American Council of Engineering Companies (ACEC), The American Public Works Association, and the ASCE to join forces to form ISI in early 2011. It forms the foundation of the Envision rating system, which is a collaboration between ISI and the Zofnass Program for Sustainable Infrastructure at Harvard.

Envision is designed to cover all civil infrastructure, including roads, bridges, pipelines, railways, airports, dams, levees, solid waste landfills, water supplies, wastewater treatment plants, power transmission lines, telecommunications towers, and public spaces. Photo: Clayton County, Ga., Water Authority Sustainable Water Supply project/CH2M HILL.
In addition, Envision addresses the potential confusion of the more than 900 infrastructure sustainability rating systems. Policy makers, elected officials, and their constituents can’t be expected to understand hundreds of rating systems. Moreover, this is not an optimal environment for material suppliers and equipment manufacturers to invest in ways to make their products more sustainable. There are simply too many sets of rules. For example, aggregate for trench backfill or road base doesn’t need separate ways to be sustainable. Clearly there needs to be a common vocabulary.

We don’t see Envision as competing with these other systems. We see Envision as the umbrella framework to meet the need for a common language defining sustainable infrastructure, with perhaps the specific rating tools assisting at the design stage. Envision is designed to cover all civil infrastructure, including roads, bridges, pipelines, railways, airports, dams, levees, solid waste landfills, water supplies, wastewater treatment plants, power transmission lines, telecommunications towers, and public spaces.

Figure 1: Envision offers a way of assessing the sustainability of infrastructure projects in terms of their overall contribution to the communities they serve.
Envision is the tool that helps answer these questions.

To be effective, the rating system should be applied at the concept level as a way to think through all the options at the earliest stage and make a difference. The RFP stage is too late because numerous possibilities are unintentionally removed. For example, in terms of a highway project the questions might be, “Would rail be better, or should a bikeway be added?”

It also is a means of coordinating with other community projects early on. That highway project might have excess material that another community project could use instead of hauling it or dumping it. Recycling concrete from older roads or structures and utilizing it in new projects could reduce material costs and need for mining new resources. Incorporating a bike path into a roadway project could tap other community funding resources.

It is too early to present examples using Envision. It will take another year or two to bring examples to the table. However, we have examples from similar efforts in Europe, where CEEQUAL (Civil Engineering Environmental Quality assessment; www.ceequal.com), a principal model for Envision, has been applied to many projects, including the London Olympics. In the United States, the rating system was applied to a number of projects retroactively, including a water main rehabilitation project in Boston, a remote rental car facility at SeaTac Airport in Washington, and a tunnel and trestle repair project in Lolo National Forest in Montana.

Promoting heightened levels of sustainability

In April 2012, ISI launched phase one of the ISI certification program, in addition to unveiling the project application process.

Upon application, projects that have been developed in accordance with the best practices incorporated in Envision will be afforded a sustainability rating by ISI and a sustainability designation. There will be three levels of achievement within the ISI Sustainability Rating System. Each will represent an increasingly aggressive level of performance to promote progressively heightened levels of sustainability achievement over time. ISI will sponsor an independent, third-party project verification program that will add value to infrastructure projects and create public confidence in the decision-making process.

As part of the release of Envision, the following two companion tools were released this year:

- a pre-planning checklist for assessing project sustainability in increasing...
Tim Psomas is one of the founders and the first chairman of the Institute for Sustainable Infrastructure. He is the former chairman of the board of Psomas.

Both tools currently are available on the ISI website at www.sustainableinfrastructure.org.

**What consultants can do to prepare**
Consultants can take a variety of steps to assist their public clients in taking full advantage of Envision, including:
- prepare themselves to help their clients by visiting the ISI website;
- sign up for the online education about Envision;
- become certified by ISI as a Sustainability Professional and use the credentials ENV-PV;
- do a presentation to introduce public agencies to ISI and the benefits of the rating system;
- assist agencies in evaluating a recently completed project to see how it might have scored (a simplified tool is available to be used by owners to familiarize themselves with the system and the terminology); and
- help public agencies review their capital project procedures manual in terms of how a project is initiated, the sequence of tasks, the evaluation of sustainability options at the concept level, the process for community engagement, the process for including ISI project recognition in the RFP for design, and a review of standard details and specifications for sustainability.

It is clear that infrastructure rating systems need to place greater emphasis on superior performance achievements. At a time when the United States is facing a serious infrastructure deficit, utilizing Envision will provide the context to make far more enlightened decisions regarding these critical investments in the future of our communities.

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