



DESIGN SUSTAINABILITY INTO YOUR AIRFIELD CONSTRUCTION PROJECT

By Stephen Moulton, PE

Airports already provide transportation that is efficient, affordable, safe and convenient.

They also can be sustainable.

During the past 15 years, airports have placed much emphasis on green design and construction to help terminals and associated buildings — structures for aircraft rescue and fire fighting systems, snow-removal equipment, air traffic control and more — be more environmentally friendly and sustainable.

But is it enough?

Consider this: What if the Federal Aviation Administration (FAA) — say, as a result of a congressional mandate during the next Airport Improvement Program (AIP) Reauthorization effort — required that infrastructure financed through the AIP or using passenger facility charges must achieve minimum documented levels of sustainability?

Airport administrators and consultants soon would be looking for rating systems that could be used to help guide renovation, rehabilitation and replacement projects. Such programs could help see that projects produce results that are as healthy as possible: environmentally, operationally and financially.

A variety of existing rating systems are available, but professionals preparing to embrace a sustainable approach to construction should be sure to consider the systems' respective pluses and minuses.



ENVISION

Envision is a program created through collaboration of the American Society for Civil Engineers (ASCE), American Council of Engineering Companies (ACEC) and the American Public Works Association (APWA), through a nonprofit partnership known as the the Institute for Sustainable Infrastructure (ISI). The institute worked with the Zofness Program for Sustainable Infrastructure at Harvard University to jointly develop the Envision Sustainable Infrastructure Rating System.

Launched in 2012, it is designed to help stakeholders build sustainability into the nation's infrastructure — roads, bridges, pipelines, railways, dams, levees, landfills, water treatment systems, utilities and, yes, airport — that collectively amount to civil works.

Envision leaders say their system evaluates, grades and gives recognition to infrastructure projects that make exemplary progress and contributions to a more sustainable future. Envision fosters a necessary and dramatic improvement in the performance and resiliency of physical infrastructure across the full dimensions of sustainability, they say: economic, social and environmental. Projects are graded not only by individual project performance, but by how well they contribute to the performance and long-term sustainability of cities and communities.

The system's focus is on rating the performance of the infrastructure element and the project's impact on and contribution to the community. The long-term goal for Envision is to be the nationally recognized equivalent of the U.S. Green Building Council's Leadership in Energy & Environmental Design

(LEED®) certification program for infrastructure projects.

The three organizations that make up ISI — each with a strong national reputation, national reach and broad membership — seek to make Envision's ultimate adoption and acceptance as the national standard for rating infrastructure sustainability.



LEED

The primary, nationally recognized standard for measuring building or facility sustainability is LEED, which recognizes various building strategies and practices to earn points and achieve differing levels of certification as silver, gold or platinum. One shortfall in the LEED program is that it applies primarily to buildings and other vertical construction, ignoring airfield and landside infrastructure such as runways, taxiways, aprons, airfield lighting, landside transportation and more. Leaving out such projects can be problematic for airports, as such construction accounts for 70 percent of AIP money.



INFRASTRUCTURE SYSTEMS

Some state departments of transportation, private foundations and institutions of higher learning have developed and implemented their own roadways and civil infrastructure sustainability rating systems. Among them:

- Greenroads (Washington)
- GreenLITES (New York)
- I-LAST (Illinois)
- INVEST (Infrastructure Voluntary Evaluation Sustainability Tool, Federal Highway Administration)
- BE²ST-in-Highways (Recycled Materials Resource Center, University of Wisconsin)

All of these rating systems are applicable to the planning and design phases of an infrastructure project. Only three — Greenroads, INVEST and GreenLITES — are applicable to the construction phase of an infrastructure project. Only GreenLITES and INVEST are applicable to the operation and maintenance (O&M) phases of a project, although I-LAST is developing a module applicable to a project's O&M.

None of these systems have been accepted as a national or industry standard for rating infrastructure and civil works in a manner similar to what LEED has been able to do for buildings.





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AIRPORT-SPECIFIC RATINGS

Without a national standard for “flatwork” type projects, several airports have developed their own sustainability rating systems. Some notable examples:

- Sustainability Design Manual, City of Chicago (December 2003)
- Sustainable Airport Planning, Design and Construction Guidelines Version 5.0, Los Angeles World Airports (February 2010)
- Sustainable Infrastructure Guidelines, Port Authority of New York and New Jersey (March 2011)
- Sustainable Design Standards and Guidelines, Massachusetts Port Authority (March 2011)
- Green Building Standards, Dallas/Fort Worth International Airport (March 2011)
- Sustainable Airport Manual (SAM) v3.0, City of Chicago (November 2012)

While each rating system generally was developed for a specific airport, each could be adapted into a national standard. Chicago’s vision is for the SAM to become the industry standard for sustainability planning and development at airports around the world.



FAA SUPPORT

The FAA is supportive of and promotes airport sustainability through various actions and policies. Long-standing FAA programs, such as the Noise Compatibility Program and Voluntary Airport Low Emissions (VALE) program, help airports be more sustainable. One of FAA’s long-term goals is to make sustainability a core objective in airport planning, and it has moved toward that goal by establishing pilot program for sustainable master plans. Other sustainability initiatives include limited policy changes regarding FAA’s approved materials and construction standards:

- FAA DRAFT AC 150/5100-13B — Development of State Standards for Non-Primary Airports. This DRAFT AC will be applicable to all civil airports with 10,000 or fewer passenger boardings per year. Appendix 3 provides guidance for developing state-standard airport pavement (SSAP) specifications, which generally are more inclusive of recycled and sustainable materials than are FAA standard specifications.
- FAA Procurement Guidance. Section 2: Appendix — FAA Green Procurement Plan. This applies to purchasing environmentally preferable products and services.
- FAA-ARP-TR-10-1 Technical Guidance for Evaluating Selected Solar Technologies on Airports.
- FAA DRAFT AC 150/5370-XX Airside Use of Heated Pavement Systems.
- FAA AC 150/5370-10F — Standards for Specifying Construction of Airports. This includes sustainable and recycling specification changes, including:
 - Item P-219 Recycled Concrete Aggregate Base
 - Item P-306 Econocrete Base Course, which allows the use of crushed recycled concrete as aggregate

- Item P-403 Plant Mix Bituminous Pavements (Base, Leveling or Surface Course), which allows the use of state specifications for certain asphalt mixes
- Item P-501 Portland Cement Concrete Pavement, which allows the use of crushed recycled concrete pavement as an aggregate

The allowance of recycled and sustainable materials in construction will, in the long run, help airports meet sustainable goals — but more needs to be done. The FAA is looking at a variety of materials that could help make projects last longer, or reduce their ongoing carbon footprints.

Such materials will not be AIP-eligible, however, until and if they have been progressed through FAA studies and evaluation, largely at the FAA William J. Hugh's Technical Center in Atlantic City, N.J. All of these actions ultimately will contribute to improving the sustainability of airfield construction projects, which in turn will help sustain a healthier environment. ✈️

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CLINICAL TRIALS

The FAA is looking at the potential for several new materials to be used at airports, to boost sustainability of maintenance efforts and construction projects. Among them:

- **Warm-mix asphalt (WMA)**
- **LED equipment for all types of airport lighting**
- **40-year pavements rather than 20-year pavements**

