Federal Government Develops Green Building Guide Specs

Concrete Plays Major Role in Sustainable Construction

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The United States government operates more than 500,000 buildings. It will spend $10 billion on building construction in fiscal year 2005 in addition to $50 billion on transportation and homeland security construction and $18 billion on water resources and environmental construction. It is by far the largest building owner in the United States. So when the feds decide to build green, the construction industry has no choice but to follow.

That's the concept behind the U.S. Environmental Protection Agency's (EPA) latest efforts to develop a Federal Guide for Green Construction Specs. The purpose of the guide is to help federal building project managers meet various mandates established by laws and executive orders, in addition to EPA and U.S. Department of Energy (DOE) program recommendations that require the federal government to build and operate buildings with less environmental impact.

What makes this initiative especially important to the concrete industry is most federal facilities are concrete intensive—prisons, courthouses, office building, mail distribution centers, military facilities, air-
ports, roadways are just a few examples of the types of facilities the federal government owns and operates. Concrete has a lot to offer the green building movement and that fact is reflected in the guide specs. The Federal Guide for Green Construction Specs uses the Construction Specifications Institute's (CSI) MasterFormat (TM), a list of numbers and titles for organizing construction specifications. The CSI MasterFormat (TM) is generally accepted throughout the building industry. There are specifier notes throughout the document that provide additional information to assist the user in making decisions regarding which sections to include in the final project specification. The guide only provides guidance on green performance requirements, which are meant to supplement other functional requirements for products, materials and construction.

For the most part, the guide provides suggestions for meeting requirements of the LEED Green Building Rating System, recognizing the fact that many government agencies and private companies have adopted this measurement tool for their building projects. LEED, which stands for Leadership in Energy and Environmental Design, is quickly becoming the standard for green building design and construction. It was developed with industry input by the United States Green Building Systems Council (USGBC), a non-profit organization dedicated to promoting buildings that are environmentally responsible, profitable and healthy places to live and work.

The LEED rating system is credit-based, allowing projects to earn points for environmentally friendly actions taken during the design and construction process. A project requires a minimum of 26 points to be LEED certified. There are advanced levels of certification, including silver, gold and platinum, requiring a minimum of 33, 39 and 52 points, respectively. There are five core credit categories to obtain LEED points: Sustainable Sites worth up to 14 points; Water Efficiency worth up to 5 points; Energy and Atmosphere worth up to 17 points; Materials and Resources worth up to 13 points; and Indoor Environmental Quality worth up to 15 points. There is a sixth category called Innovation and Design Process for an additional 5 points. There are a total of 69 LEED points available.

The LEED point system is not defined in terms of materials or specific systems but describes criteria for obtaining the credits and strategies for achieving them. The Federal Guide for Green Building Specs does address products, materials and systems and how those products affect environmental performance with specific reference to the LEED rating system. If one studies the LEED rating system and the guide spec in detail, it becomes clear that concrete can play a significant role in environmental performance. For example, the Guide Specs SECTION 02700 – Bases, Ballasts and Pavements – provides several suggestions on how concrete can meet LEED criteria, including a credit for reducing urban heat islands by using light-colored pavements. One specifier note states:

"On hot summer days, urban air can be 2-10 degrees Fahrenheit hotter than the surrounding rural areas. Not to be confused with global warming, scientists call this phenomenon the "urban heat island effect."
The LEED rating system provides points for using light colored pavements and pervious concrete pavements for parking areas to reduce urban heat islands and storm water runoff respectively. The federal green spec promotes the use of energy efficient wall systems such as tilt-up panels to minimize energy consumption.

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Heat islands form as vegetation is replaced by low reflectivity materials such as dark colored paving. These surfaces absorb – rather than reflect – the sun’s heat, causing surface temperatures and overall ambient air temperatures to rise...USGBC-LEEDTM v2.0/2.1 includes credit for reducing the