

Facilities & Infrastructure **CONNECTIONS**



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ASHRAE/USGBC Standard 189.1, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings, was released in May 2009. Section 5.3.2.3 **mandates** cool roofs¹³

54.2%

The recycling rate for aluminum cans in 2008

According to the Can Manufacturers Institute¹⁴

Make Mine a Cool Roof . . .

Do you remember as a kid how much it hurt to walk barefoot on a paved road? Do you also remember that walking on the white shoulder stripes hurt less? The blacktop absorbed much more of the sun's energy than the white stripes. A conventional roof works the same way, making it a hot place in the summer.

Recent advances in roofing design have given rise to the concept of a "cool roof." A cool roof efficiently *reflects the sun's energy and emits absorbed solar radiation back into the atmosphere*. Such a roof remains relatively cooler and less likely to transfer heat down through the other components of the roof system and into the building thereby reducing the facility cooling load.

Two factors determine the degree of efficiency of

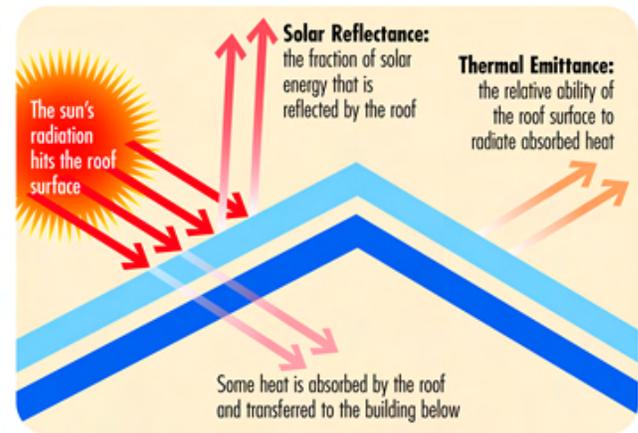


Figure 1: Effect of Solar Energy on a Roof (Courtesy of the Cool Roof Rating Council)

a cool roof: solar reflectance (SR) and thermal emittance (TE). Measured on a scale of zero to one, the greater the decimal number of SR and TE, the better the efficiency and the cooler the roof (See figure 1). Low valued roofs **absorb** while high valued roofs **reflect** all heat and radiation.

Cool roofs are commercially available in

many styles and designs. As the technology improves, the standards mature, and specifying requires more thought. The Federal Energy Management Program (FEMP) offers the latest guidance on selecting standards and design details appropriate for your project.

(Continued on page 3)

Inspection Standards for Vehicle Bridges

Since the time of the Romans, bridges have connected civilizations, serving both commercial and military purposes. Seemingly integral to the landscape, society often takes for granted their

integrity. Facilities Management Professionals know better.

The department must confirm its bridges are safe, functional and reliable. A bridge

inspection program must include:

- inspection policies and procedures
- a quality assurance/quality control system

(Continued on page 4)

85%

Percentage of the sites that conducted validations for buildings and trailers that earned **green**

Fiscal Year 2010 FIMS Data Validations

Thanks to all the programs and sites for their FY 2009 FIMS data validations. Eighty-five percent of the sites that conducted validations for buildings and trailers earned green. Thirty-three of 46 sites validated OSFs; 72 percent obtained a green score.

Find the FY 2010 validation schedule online.⁴ Quality assurance site visits will occur at highlighted sites.

The FY 2010 FIMS validation guidance identifies several changes to the validation process: (1) a single validation will draw from buildings, trailers, and OSF's resulting in a single scorecard; (2) the process will validate for the first time these data elements: Outgrant Indicator, Excess Indicator, Estimated Disposition Year and Sustainability; and (3) the process will no longer validate Net Useable

Square Feet.

Programs should furnish the scheduled dates for their FY 2010 FIMS data validations to Phil Dalby by December 15, 2009.

Thanks again for supporting the validation process, a recognized federal agency best practice.

Phil Dalby ✎

"If you are a senior leader or maintenance manager, you need to ask yourself these three questions:

"What metrics tell me how effective my preventive maintenance (PM) program is?"

"Are my assets ranked based on risks to the business?"

"Is that ranking used to determine on which assets I must execute PM, on schedule, 100% of the time?"

- Ricky Smith

ASHRAE Building Label Premiere

The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) unveiled a **Building Energy Quotient Label**⁵ program in June 2009. Focusing solely on building energy use, it expands on the type and amount of information the Environmental Protection

Agency (EPA) Energy Star program provides. According to ASHRAE, applicants will not have to duplicate the information already submitted through Portfolio Manager.

The label will allow for side-by-side comparison of as-designed and in-operation performance,

identify peak demand reduction and demand management opportunities, list energy use from on-site renewables, and provide measurement-based Indoor Environmental Quality (IEQ) indicators.

Ivan Graff ✎

What went wrong at WRAMC Building 18

Conventional wisdom holds that maintenance should decrease as assets near scheduled retirement dates.

Such "benign neglect" may have disastrous consequences when utilization rates remain

high as a retrospective article⁶ by Ricky Smith in the July-August 2009 *Facilities Engineering Journal* finds.

The author argues that considering utilization in funding decisions could have avoided the inhospitable or unsafe

conditions for occupants in select facilities at the Walter Reed Army Medical Center that drew media attention in the fall of 2007. The author details causes of the failure and the corrections the installation made.

Ivan Graff ✎

Uptime, a Key Performance Indicator

What purpose does maintenance have? To ensure assets function adequately. OECM collects data intended to assess maintenance programs with indices measuring condition, utilization, sustainment, and proactive maintenance investment. Site managers collect more indicators to assist with daily decisions.

An August 2009 article by Raymond Atkins in *Maintenance Technology*⁷

identifies key performance indicators for maintenance. Uptime, the ratio of actual to planned runtime, may seem unusual without a basis in money or an occasional field survey for condition or usage. The author argues that it directly evaluates adequate function.

Sites with service level commitments, a building automation system, and a maintenance tracking and scheduling system already

record the data needed to calculate uptime. Uptime and other time based performance measures reveal the impact, if any, of the poor investment indicative of a low condition index or sustainment rate.

Managers may want to take advantage of existing work breakdown structures like Uniformat II to track subsystems or disciplines.

Ivan Graff ✍

$$Uptime = \frac{Runtime_{Actual}}{Runtime_{Planned}}$$

Cool Roofs *(continued from page 1)*

Now available to all programs, the National Nuclear Security Agency (NNSA) RAMP Contract has successfully included EPA Energy Star and LEED standards:

- EPA Energy Star Roof Product Program sets a minimum average reflectivity of at least 0.65 for low slope roofs and 0.25 or higher for steep.

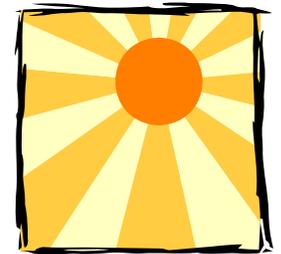
- LEED specifies a Solar Reflectance Index (SRI) (the combination of reflectivity and emissivity) of 78 for low slope roofs and a minimum of 29 for steep.

Properly maintained cool roofs reduce energy consumption and green house gas emissions throughout the building's

life. Unless economically unfeasible, all new buildings or renovations that include a roof replacement should include a cool roof.

The Cool Roof Rating Council¹ offers additional information on this topic.

Peter O'Konski ✍



35%

The growth rate of new green roof installations in CY 2008

*According to Green Roofs for Healthy Cities 4th Annual Member Survey*¹⁵

Issue Reference Web Links

- | | | |
|----------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|
| 1. http://bit.ly/b0GOn | 6. http://bit.ly/NLNYL | 11. http://bit.ly/18b948 |
| 2. http://bit.ly/Fldcw | 7. http://bit.ly/1XiLRm | 12. http://bit.ly/1485qM |
| 3. http://bit.ly/158Dud | 8. http://bit.ly/P9yYo | 13. http://bit.ly/rcYPa |
| 4. http://bit.ly/3FdJ8i | 9. http://bit.ly/TeSoN | 14. http://bit.ly/eukgK |
| 5. http://buildingeq.com/ | 10. http://bit.ly/1YNzHL | 15. http://bit.ly/131yrr |

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LM, RW



We're on the Web!

<http://tinyurl.com/mtkt9u>

LEED 3.0 Resources

LEED 3.0, also known as LEED 2009, introduces significant changes to the more than decade old green building rating system, like normalized point scales and regional credits. Until LEED 3.0, the new construction (NC) certification applied to a building as-designed and, for some credits, as-built. Owners faced no consequences when their certified NC buildings failed to meet green design intent. LEED 3.0 introduces minimum program requirements

(MPR) and along with the requirement that "Certification may be revoked from any LEED project . . . [for] non-compliance with any applicable MPR." Chris Dixon in his September 2009 *Walls and Ceilings*⁸ column discusses some implications about this change. The reference links include two^{9, 10} additional articles on LEED 3.0 changes and a link to the Green Building Certification Institute's LEED existing building guide.¹¹

Program or sites in search of strategic transformational sustainability guidance should consult *The Roadmap to Sustainable Government Buildings*¹² a collection of tools, resources and success stories edited in May 2009 under the auspices of the U. S. Green Building Council and the National Association of State Facilities Administrators.

Ivan Graff ✈

Vehicle Bridge Inspections (continued from page 1)

- an accurate inventory with load ratings
- inspection records and reports

The training and competency requirements for vehicle bridge inspection program managers and inspectors appear in the National Bridge Inspection Standard (23 CFR 650.309).

Qualified individuals oversee routine inspections for each vehicle bridge at regular intervals not to exceed 24 months following the

procedures in AASHTO MCEB-2-M, *Manual for Condition Evaluation of Bridges*, 2nd Edition. After an inspection and condition assessment, a registered professional engineer must determine the load rating for each bridge.

The AASHTO Manual describes properly maintaining bridge inspection files while the National Bridge Inspection Standards addresses which bridges must appear in an inventory. Format certain

data collected per *Recording and Coding Guide for Structure Inventory and Appraisal of the Nation's Bridges*, FHWA-PD-96-001.² Do not neglect to keep the operational status and inspection date FIMS data elements current.

A U.S. Department of Transportation, Federal Highway Administration website³ answers questions about the National Bridge Inspection Standards.

Cindy Hunt ✈