An occasional publication of sustainability information useful for your project work

AEC Sustainability Team News Flash: July 2012

The information presented is summary in nature, presented to alert you to new sustainability initiatives. For more information, or to contribute information, contact one of the AEC Sustainability Team Members: Ken Birringer, Larry Bowman, David Karle, Deanna Mabry, Michele Oliver, or Carol Simon.

Does ASHRAE 90.1 Apply to Your Project?

ASHRAE Standard 90.1 2007 is the energy efficiency code adopted by U-M.

ASHRAE 90.1 applies to the building envelope when the enclosed spaces are either:

- Heated by a heating system whose output capacity ≥ 3.4 Btu/h°ft2 *or*
- Cooled by a cooling system whose output capacity is ≥ 5 Btu/h°ft2.

Also, ASHRAE 90.1 applies to the following systems and equipment:

- Heating, ventilating, and air conditioning,
- Service water heating,
- Electric power distribution and metering provisions,
- Electric motors and belt drives, *and*
- Lighting

So the answer is *yes*, ASHRAE 90.1 probably applies to your project.

Note, however, that when it comes to building alterations there are certain exceptions so read the code carefully to determine which specific parts apply to your project. For example, the code does not apply to alterations of walls if the existing structure has no framing cavities and no new framing cavities are created. Generally, the rule of thumb is that an alteration can't make the space or system worse in terms of energy efficiency. That said, improving energy efficiency should always be carefully considered, even if the code allows an exception.

Please be sure that your project complies with ASHRAE 90.1 energy standards.

Caution about Specifying Fenestration Performance

In the past it was adequate to specify U-value and Solar Heat Gain Coefficient (SHGC) maximums in the Glazing section (08800) of the specifications. The values that appeared in Section 08800 were typically for "center-of-glass." However, in ASHRAE 90.1-2007 the maximum allowable U-value and SHGC must be for the entire fenestration assembly and *not* center-of glass, which means that the framing is taken

into consideration. The framing system almost always lowers over-all fenestration energy performance as compared with just the glazing performance.

Glass manufacturers only report glazing performance; the fenestration manufacturer is responsible for the overall U-value and SHGC performance of the fenestration assembly. Because of this, our Division 8 Design Guidelines stipulate that the thermal performance values should be in the appropriate aluminum framing section of the spec, not the glazing section. The AEC Masterspec is now structured in this way.

Please make sure that all specifications produced by outside A/E firms follow this procedure. The Sustainability Team has found that the A/E specifications often fail to include U-value and SHGC in the framing specification sections.

We have confirmed that manufacturers of storefront, aluminum windows and curtain walls appearing in the AEC MasterSpec and in our Preferred Manufacturers List publish assembly values which meet the requirements for ASHRAE 90.1-2007.

CONDENSING BOILERS

If your project requires a new hot water boiler whose primary purpose will be to serve building space heating needs, a condensing boiler is probably the right choice. These boilers can have efficiencies of 97% or higher, compared to the energy code which requires boiler efficiencies of around 80% (depending on boiler size).

In the past, due to operational concerns, condensing boilers were not used at U-M. Those concerns have been resolved, and condensing boilers are being used on an increasing number of projects.

For a condensing boiler to achieve high efficiency it is imperative that supply water temperature reset strategies be employed, where the temperature of the supply water is reset downward as the outside air temperature rises, so that return water temperatures decrease to below 140°F.

Contact the Sustainability Team for additional requirements when condensing boilers are being specified. If your project is providing a space heating hot water boiler, make sure that your design team is aware that a condensing boiler is the preferred choice.

(Note that, when it is available, central utility plant steam should normally be used as the source for heating hot water, not new boilers).

Special thanks to Wayne Groth for contributing to this article.

REGISTER YOUR LEED PROJECT BEFORE THE RELEASE OF LEED V.4

The U.S. Green Building Council (USGBC) is predicting the release of the next version of the LEED rating system, LEED v.4, to occur in 2013. Additional prerequisites, new credits and an emphasis on verifying design calculations are anticipated.

Also, the next LEED rating system is expected to use ASHRAE 90.1-2010 as a baseline for energy efficiency. The ASHRAE 90.1-2010 energy standard is 18% more efficient than the 2007 version that is currently in use.

The LEED v.4 requirements are expected to impose significant cost impacts on U-M projects seeking LEED Silver Certification. To avoid anticipated cost impacts associated with LEED v.4, projects seeking LEED Silver Certification are encouraged to register with the USGBC under LEED v.2009 prior to the LEED v.4 launch.

Sustainability Summary Required for All Regental Projects

A Sustainability Summary must be prepared for every project large enough to require Regental approval. A Sustainability Summary is a short description of the project's sustainable features, complete with a color photo or rendering. The AEC Design Manager must complete the Summary and submit it to Marina Roelofs, with a copy to Mary Manor, at the end of the Construction Documents phase.

A procedure and template for the Sustainability Summary will be available in the new Design Managers Manual (which replaces the old UAO Manual and will be added to the overall AEC Procedures Manual). Until then, the procedure is available at: S:\Sustainability\Procedures\Building Project Sustainability Summary Procedure.docx and the template is available at: S:\Forms\Project\Building Project Sustainability Summary.docx.

Qualifying construction projects should apply for "Designed to Earn the ENERGY STAR" label

The Sustainability Team strongly encourages project leads to submit major renovation and new construction projects for the EPA's "Designed to Earn the ENERGY STAR (DEES)" certification if the building qualifies under one of the designated building type categories. Qualifying design projects that receive an EPA energy performance score of 75 or higher are eligible for this certification. The projects and A/E firms that achieve the certification are recognized by EPA in the ENERGY STAR Challenge for Architects.

Complete information about this program and the application procedure and forms are available at the following web site:

http://www.energystar.gov/index.cfm?c=cbd_guidebook.cbd_guidebook_apply_1

A procedure for the DEES certification will be available in the new Design Managers Manual. Until then the procedure is available at the following location: S:\Sustainability\Procedures\Designed to Earn Energy Star.