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LEED issues in retail centers: Ensuring building design components are LEED compliant

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Over the years, we have designed many millions of s/f of retail space. We have always tried to design energy efficient systems and specify energy efficient equipment. In the last several years, however, we have been required to design the various systems in such a manner as to achieve LEED certification.

The requirement to achieve LEED certification is coming both from the local municipalities, who won't approve the drawings unless the work achieves LEED certification, and from the developers, who are striving for LEED certification both as a voluntary step toward the future and as an incentive to green minded national retail tenants.

In order to achieve LEED status, a certain number of "points" must be achieved. These "points" come from various aspects of the construction, ranging from site location to proximity to public transportation to energy efficient building systems. At the start of the design phase, the design team typically reviews a LEED point sheet, which lists each possible point that can be achieved and the likelihood as to whether that point will be used in this project.

The decision to use a specific point has to be made together with the owner, as it usually involves a significant financial component. With most new out of the ground retail centers, the majority of LEED points come from the design of the building envelope and other architectural or construction related items. In the case of a building renovation, a majority of the points typically come from the building systems.

In order to make sure we comply with the requirements of either LEED standards or some other local standard, we use one of several software programs on the market. Many local municipalities, including New York, California and Florida, require a "COMcheck" calculation. This COMcheck is a compliance program prepared by the U.S. Department of Energy that makes it easier for designers, builders, product manufacturers, and code officials to comply with energy codes based on the IECC or ASHRAE/IESNA Standard 90.1 requirements. Another popular program is eQUEST, the QUick Energy Simulation Tool, which is also prepared under funding from the U.S. Department of Energy. These programs, and others like them, typically have three major components, envelope, lighting and mechanical.

For each of these components, we generate detailed calculations to make sure that the results of the calculation meets or exceeds the LEED requirements, which is typically 15%-20% higher than

the ASHRAE Standard 90.1 requirements. For the envelope calculations, we work with the architect and/or the exterior wall consultant to determine the gross areas, material U Values, fenestration shading coefficients, etc. of each exterior envelope component to determine compliance with the job specific requirements. The compliance programs are used to fine tune the architectural and exterior envelope design to verify compliance.

For the lighting calculations, we work with the architect and/or lighting designer to determine the type of interior and exterior lighting, the type of controls, switching and wiring and the total allowed watts per square footage. Lighting compliance requirements include the total energy budget i.e. the watts per s/f and the efficiencies of all individual lighting components. For the mechanical calculations, the programs are again looking for overall energy budget and the efficiencies of all the individual mechanical components.

In rural type shopping centers, energy efficient systems are relatively simple to design. It is simply a matter of specifying equipment such as rooftop HVAC units, exhaust fans, hot water heaters, etc. with higher efficiencies and environmentally friendly refrigerant agents. Lighting fixtures and systems, both interior and exterior, are typically specified by the architect and can also be specified with higher efficiencies, occupancy control and lighting control panels. Often, central building management systems, including indoor air quality and CO2 controls, also increase the efficiency of the system operation and of course qualify for LEED points. With the plumbing fixtures, low flow fixtures and/or waterless urinals are often specified.

In conclusion, requests from local building departments to comply with minimum LEED requirements are more frequently becoming mandatory. Developers are also requiring LEED certification in an effort to meet the needs of increasingly energy savvy national retailers. This green movement is not in the future, it is here.

David Glickman, P.E., is the president of Glickman Engineering Associates PLLC, New York, N.Y.

New England Real Estate Journal - 17 Accord Park Drive #207, Norwell MA 02061 - (781) 878-4540