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Bringing Engineers in Early as Buildings 'Green'

It's no secret that commercial buildings are responsible for a large portion of the energy consumption in the state of Colorado; 18 percent according to the Colorado Department of Local Affairs. However, what may not be widely known is that 66 percent of energy consumption within commercial buildings is attributed to the mechanical and lighting systems. In an effort to become greener, many cities and counties in Colorado, including Denver, have adopted the 2015 International Energy Conservation Code requirements.

Given that much of the code compliance rests on the design of efficient mechanical and lighting systems, the 2015 IECC is changing the way in which architectural/design teams work with their mechanical, electrical and plumbing engineers. In the past, the owners of a building would share their vision with the architect, who would then establish design decisions before sending the project to bid. However, the bid prices do not account for the cost of complying with the new code. It has become critical to the budgeting, permitting and time line of a project for the engineering team to be brought on much earlier in the process to determine the necessary systems before going to bid.



MDP Engineering Group provided engineering services for 1900 16th Street.

On the electrical design side, the biggest challenge that arises from 2015 IECC is the additional costs related to lighting controls. Creating its most prominent effect in commercial retrofits, the new

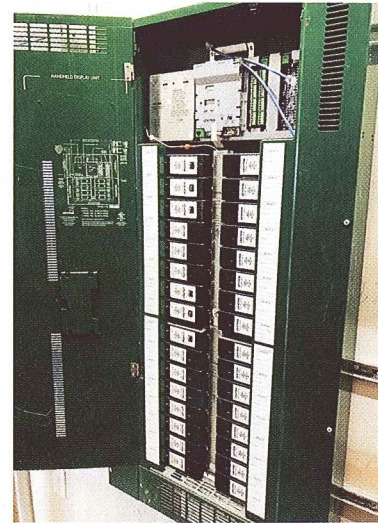
code requires extensive investment in equipment such as: occupancy and vacancy controls, daylight harvesting sensors, and centralized wireless or low voltage lighting controllers. As a corollary, the sophisticated controls require that light fixtures in the space have dimming capabilities, which often triggers the need for an all-new LED light fixture package to be installed in the space. While there are exceptions in the code that allow for some leniency in satisfying these expensive requirements, unless the scope of the

remodel is minute, the need for compliance is inevitable.

The new code is also influencing plumbing design and construction. An example would be the code requirements for public restrooms. To reduce water usage and provide instant hot water, public lavatories require the hot-water loop to be within 2 feet of the plumbing fixtures. The hot-water loop must run down the wall to serve the fixture before circulating back up to the ceiling. Older buildings may require additional pip-

ing to meet code, which greatly adds to the cost of the project. However, if the engineering team is brought on in the beginning of a project, it is able to help determine a design direction that meets the 2015 IECC from the onset and save the team on additional costs.

Because of the rising costs of code implementation, architects/designers no longer can afford to remodel a commercial space in the same way. It has become necessary to have more coordination between the engineer and the architectural design/ownership team to avoid retrofits that will be cost prohibitive and unsound from an investment standpoint. The engineer can provide significantly more direction to the architects, tenants, building managers and contractors than ever before on ways to offset the cost associated with the extensive nature of proper implementation of 2015 IECC. \



An example of an electrical box



*Havey Productions
Tabor Center; another MDP project.*

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