

# DNR GREEN BUILDING SYSTEMS WORKSTATION DESIGN

## LEED INNOVATION AND DESIGN – MODULAR SYSTEMS FURNITURE

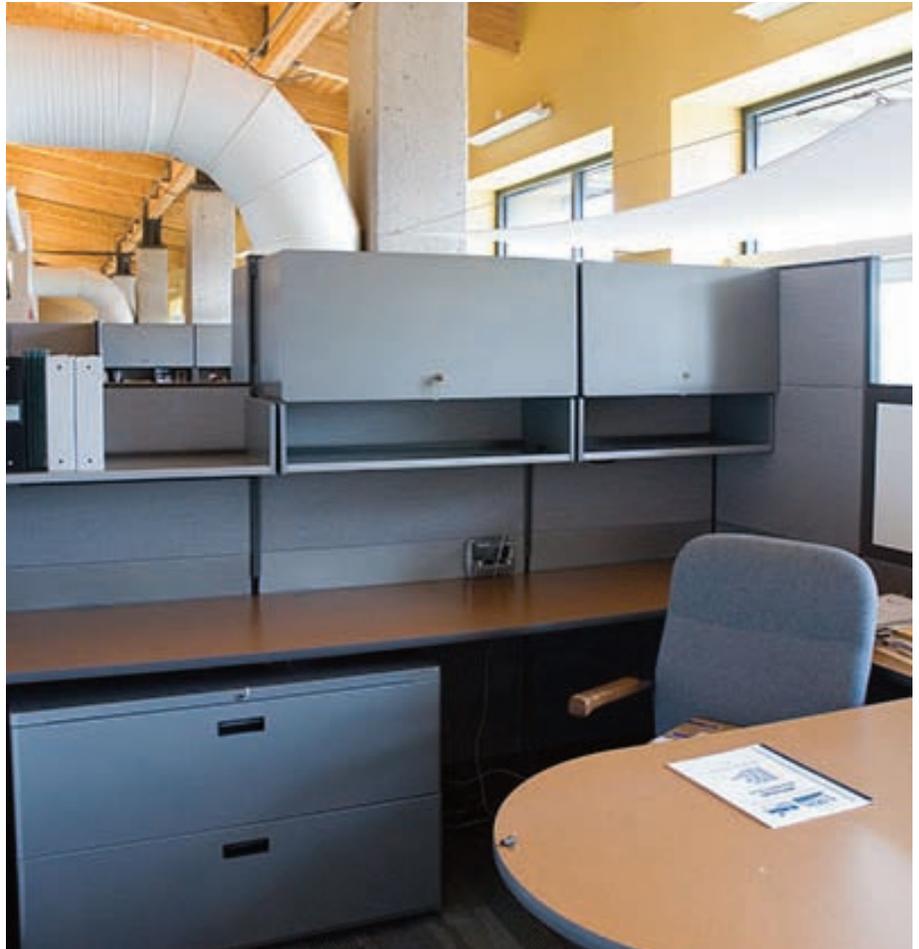
The LEED certification process is much less about chasing points as it is making wise decisions to expand and enrich the experience of occupants in a building with a set budget. Opportunities exist that challenge normal everyday business practices and change paradigms when the normal business model doesn't fit a new set of criteria and vision. Securing Greenguard certification of systems furniture manufactured for the Lewis and Clark State Office Building gave the design team quite a challenge and yet was accomplished in an atmosphere of teamwork and cooperation.

The Missouri Department of Corrections, through the Missouri Vocational Enterprises operation is required by state statute to provide all systems furniture for state agencies. Normal MVE systems furniture design had been based upon a solid medium density fiberboard (MDF) panel system wrapped with fabric and a sponge material backing. The manufacturing of many MDF products contains resins and glues creating volatile organic compounds (VOCs) that release harmful emissions over a number of years in an enclosed building environment.

Normal MVE operating procedures allow state agencies to develop specifications allowing MVE to make informed decisions concerning their ability to manufacture what is specified in an order. Specifications for systems furniture were developed for the Lewis and Clark State Office Building requiring that recycled materials be used. It also required the elimination of harmful VOCs to improve the indoor environmental quality and meet national Greenguard certification requirements. MVE initially indicated their product line could not be revised to meet the environmental standards required by our specifications. However, changing the MVE paradigm was essential and would enhance the MVE product line by offering a product that is free of VOCs and would improve indoor environmental quality in state office buildings.

Through the insistence and participation of department management, the design team asked MVE and its product supplier to meet and discuss the possibility of a new product line that would meet Greenguard certification requirements. For years, systems furniture manufacturers have been developing product lines free of VOCs that enhance indoor environmental quality. Leggett and Platt, the MVE product supplier was not only a Missouri manufacturer but also supplies parts and materials for most all state and federal

*Each of the cube designs were built, based on new construction guidelines created specifically for the LCSOB. Low-VOC, recycled materials were used for most of the cube elements. The interior and exterior light shelves on the south-west-facing windows reflect light above the work stations. This "daylighting" drastically reduced the interior lighting requirements and energy use.*



corrections operations. The design team developed a strategy to make the process of developing a new product line by Leggett and Platt desirable as a marketing tool to enhance their company's market share in sustainable systems furniture design.

Both MVE and Leggett and Platt were intrigued by the challenge of developing a sustainably designed product and committed to assisting MVE expand its product line, not only for this building but for other state agencies interested in improving indoor environmental quality in their facilities.

*The design team programmed the functional needs for two standard sizes of typical workstations from survey responses received from building occupants. Survey questions pertained to space needs for filing, storage and work surfaces, acoustics, conferencing and group work dynamics, computer usage, use of occupant's time, sight lines, confidentiality of work and associated work tools.*

The Sierra Tile frame panel system was manufactured from 70 percent to 100 percent recycled steel that can be stacked in 15-inch and 20-inch increments. Stacker panels are covered with Meyer-Paitz recycled polyester material on the upper-inside panels toward the full-height middle backbone and are 100 percent recycled aluminum-painted using a powder coat painting process. The panels contain no solvents on the lower side and front. Plastic trim and molding is made from 5 percent to 10 percent recycled material. Work surfaces consist of Sierra Pine Medite II formaldehyde-free and 100% pre-consumer recycled wood product. Overhead storage units and file cabinets also were designed using steel, aluminum and Medite II with the powder coat painting process.

Forty percent of the expected building occupants who would be using the workstations responded to the survey. A work group was subsequently formed consisting of 16 employees representing all the programs that would be occupying systems furniture workstations in the Lewis and Clark State Office Building.

The design team walked the work group attendees through the steps occurring prior to the work group becoming involved, explained the overall goals of the project design and summarized the results of the surveys. Large format layouts were placed on the walls along with images of various solutions for storage, worksurface configurations and computer and keyboard placement. Discussion allowed work group members to react to the preliminary layouts, voice opinions, brainstorm solutions and make suggested changes for solutions to achieve a functional design. Finally, Leggett and Platt installed a display unit of the Sierra Tile System at MVE headquarters for the design team and work group members to test.

Two issues were paramount in the design of systems furniture workstations: the height of systems panels needed to be set to achieve the best results from the daylighting aspects of the building; and the resulting privacy and noise issues of the shorter side and front systems furniture panels needed to be addressed. Earlier in the design process, acoustical drop ceiling panels – called “clouds” – were added in areas to help with noise reduction. Panel material coverings also were important to assist in masking sounds. Computer and telephone placement was critical in order to take advantage of the high middle backbone panels so that employees would face the higher panels to help reduce normal voice and work sounds. Building guidelines also were developed by a work group consisting of building employees to assist occupants in understanding how to work within the shorter

systems panel walls.

The project team was required to use the statewide Office of Administration systems furniture space standards. The OA space standards contain all position classifications within the state and allot a certain amount of office or cubicle square feet to each classification. Cubicle workstations were required to be developed into two cubicle sizes of 64 square feet and 80 square feet, per the state standards. Three designs were developed for each of the two sizes. Employees then chose the design they wanted within the standard for their position classification.

Collaboration between the design team, MVE and Leggett and Platt ultimately shortened the manufacturing and installation process to meet the construction timeframe, including a Greenguard certification of the entire system. It also allowed the systems furniture materials to be a part of the pre-occupancy air flush-out of the building that was scheduled to remove any residual airborne VOCs left from the manufacturing process.

The following employees participated in the workstation design process with BNIM and can be contacted for additional information.

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Lisa Cook, WPSCD  
Elena Seon, WPSCD  
Charles DuCharme, GSRAD  
Teresa Rogers, DO

Ultimately, the intent of the systems furniture design was to provide a product containing no VOCs, allow employees a maximum amount of storage space and provide a daylit environment. The goal was to have at least 75 percent of occupants in a daylit environment without harsh, overhead lighting, the majority of which would have a view to the outside of the building.



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