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LEED developing sustainable design for medical facilities

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Military medical facilities being designed and built today are incorporating sustainable design practices that will help conserve energy, enhance indoor air quality, increase infection control and improve the way the facility looks, making the health care experience better for Soldiers, their family members and other beneficiaries.

Hospital, clinic and laboratory facilities are being designed to meet a requirement to have all FY13 and beyond buildings certified at a minimum rating of Silver Leadership in Energy and Environmental Design v2009 New Construction or LEED for Healthcare - for Green Buildings Design and Construction. LEED for Commercial Interiors is being considered for projects that involve mostly building interiors. LEED v2009 New Construction Silver certified buildings must achieve 50 to 59 points. A more ambitious but obtainable Gold rating requires 60 to 79 points.

A new chapter for UFC 4-510-01 Design of Medical Military Facilities will provide sustainable design criteria for permanent military health care facilities. Sustainable Design requirements shall be based on the U.S. Green Building Council's LEED rating system. Two of the LEED rating systems will be compared and applied to all military health care facilities. LEED for Healthcare and LEED v2009 also known as LEED for Building Design and Construction will be applied where appropriate for all stand-alone and major renovations of Department of Defense medical facilities. Buildings and individual credits can be used as applicable for new construction, renovation. When a project does not include an addition, renovation of the building envelope or replacement of the mechanical systems, LEED for Commercial Interiors will be considered.

The U.S. Army Engineering and Support Center, Huntsville, through its Medical Facilities Mandatory Center of Expertise and Standardization, located in Alexandria, Va., plays a big part in designing these new state-of-the-art medical facilities. The MX professional staff provides design review and medically unique guidance for architectural, life-safety, mechanical, electrical, commissioning and communications building systems.

The MX partners with the U.S. Army Health Affairs Office, the U.S. Army Health Facility Planning Agency and the U.S. Air Force Surgeon General's Office (Health Facilities Division) to ensure sustainable design practices are included in plans for new medical facilities.

The MX also coordinates and consults with the U.S. Navy's Medical Facilities Design Office to write and revise medical facility criteria. The MX consults on Navy projects built by the Corps of Engineers. The Corps' geographic districts acting as the construction agent coordinate with the MX to incorporate design standards necessary to build a complete and usable facility certified by The Joint Council. The MX authors and enforces design standards and guidance for facilities that support TJC's purpose to enhance, refine and standardize hospital data, data transmission and performance measures in order to assure one robust, prioritized and standard quality measure set for hospitals and ambulatory care centers.

Soon to be completed world class facilities like the Fort Belvoir Hospital have pioneered sustainable features such as alternative energy, bike racks, construction waste management, energy management plan, LEED Silver, low-emitting materials, occupant lighting control, occupant thermal control, storm water management and sustainable return on investment. Fort Belvoir used a comprehensive evaluation system Sustainable Return on Investment to reduce energy and focus on sustainable patient environment.

Some of the major projects under development include The Honor Award Concept Design winner Ambulatory Care Center at Lackland Air Force Base, Texas; the Fort Knox, Ky., replacement hospital and a replacement public health command laboratory at Fort Detrick, Md. Future projects include a medical center at Fort Hood, Texas, and facilities at Fort Bliss, Texas, and in Germany.

### **Sustainable Design Exterior Elements**

Building aesthetics support LEED initiatives. The development of medical facility sustainable design begins with the building envelope (elevations, entrances, openings and roof). The selection of a major medical facility design from three or more schemes involves the design team. The rainwater at Fort Belvoir is recycled for landscaping use

The use of regional and recycled materials gains valuable LEED credits. Very often local sustainable design success stories are lessons learned from other DoD projects to be applied to new LEED certified hospital projects.

Another way to earn LEED credit is to enhance the patient care environment by using glass and glazing to maximize daylight and enhance views. Windows and glazing provide patients and staff with views of landscaped areas, healing and green roofs that help reduce patient and staff stress and improve the living and working conditions for staff.

During the Fort Hood design process, solar shading studies and energy modeling were conducted to aid in the orientation of the building, use of sunscreens and proportion of windows.

The building envelopes materials should be selected for high performance and reliability, with an emphasis on a hierarchy in form, detail and color. At selected roof areas, vegetated roofs can be designed to facilitate

improved views for patients, visitors and staff while improving the sustainable aspects of the roof surface, canopies and coverings.

Through these design efforts, the Huntsville Center is helping develop a state-of-the-art world class military medical center and modernize the military's medical facilities while improving energy efficiency and creating sustainable facilities that will serve Soldiers, their family members and other beneficiaries for years to come.

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