SUSTAINABLE ENGINEERING FOR NSLS II

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ABSTRACT

New facilities built in the United States using government funds must comply with sustainable design requirements. Sustainable design principles use a "cradle-to-grave" approach to sum the total economic and environmental impact for new or upgraded facilities. All materials and processes are included in this approach starting with the extraction of raw material and continuing through finished product transportation and installation, and then even beyond to include post-installation operations, maintenance, reuse, and disposal. The United States Department of Energy and Environmental Protection Agency sponsored the development of the Sustainable Building Technical Manual which gives guidelines to apply sustainable principles to the development of a new facility. The National Institute of Standards and Technology sponsored a Building for Environmental and Economic Sustainability technical manual and user guide. It is expected that NSLS II will be certified to standards set by the United States Green Building Council's Leadership in Energy and Environment Design (LEED) program using the guidelines within these manuals. These principles must be utilized during the design and construction phases so that a state-of-the-art facility is produced from both the technological as well as the sustainable engineering point of view. This paper focuses on explaining the sustainable engineering concepts applicable to such a facility. From a world-wide perspective, sustainable engineering concepts will help make NSLS II environmentally-friendly in addition to being a world-class research facility.

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