

**An Evaluation of Vegetated Roofing Technology:
Application at Air Force Plant 4, Building 15**

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The United States federal government constructs and maintains over 500,000 buildings across the world. The majority of these facilities are covered with asphalt built-up roofs, typically considered a non-sustainable building component. The vegetated, or green, roof offers a more environmentally friendly alternative to these conventional roofing materials. A literature search, case studies, site visits, and a life cycle cost evaluation were completed to assess the feasibility of a vegetated roof installation at an Air Force facility in Dallas, Texas. The initial and annual costs of an appropriately designed vegetated roof and asphalt built-up roof were compared over a 45 year life span. The initial cost of the green roof was double the cost of built-up roof. However, the life cycle cost, as a net present value, of the green roof was shown to be a fraction of the asphalt built-up roof. Additionally, literature sources indicate a green roof offers the benefits of storm water run-off and energy use reduction, and increased longevity as compared to conventional roofing systems. Results of the study suggest the green roof may be a cost effective and environmentally friendly alternative for federal buildings and the life cycle cost evaluation may be an appropriate, convenient method for evaluating other sustainable building components and energy saving features.

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