DESIGNING TO MEET PERFORMANCE REQUIREMENTS DEFINED IN THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007

NANCY SULLINS MPH, LEED AP

THE PRESIDENTIAL EXECUTIVE ORDER (EO 13148) – GREENING THE GOVERNMENT THROUGH LEADERSHIP IN ENVIRONMENTAL MANAGEMENT, AND THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007 (ACT) HAVE PLACED CHALLENGES ON BUILDING DESIGNERS AND ENGINEERING TEAMS.

EO 13148, signed by Bush in 2000, mandates that "environmental management considerations must be a fundamental and integral component of Federal Government policies, operations, planning, and management." The primary goal of this EO is "for each agency to strive to promote the sustainable management of Federal facility lands through the implementation of cost-effective, environmentally sound landscaping practices and other programs to reduce adverse impacts to the natural environment."

NEW OR REDEVELOPMENT
EXCEEDING 5,000 SQ.FT.

Title IV - Energy Savings in Building and Industry, Subtitle C - High Performance Federal Buildings of the Energy Independence and Security Act of 2007 contain two sections, Section 436 and Section 438, that place specific requirements on the design of new federally funded buildings. Section 436 requires "green practices that can be used throughout the life of a Federal facility." Section 438-Stormwater Runoff Requirements for Federal Development Projects, states that "any development or redevelopment project …with a footprint that exceeds 5,000 square feet shall use site planning, design, construction and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume and duration of flow."

Because of the requirements defined in EO 13148 and the Act, a building design needs to include sustainable management, environmentally sound practices, and restore site hydrology to predevelopment condition as near as possible.

One effective sustainable management strategy, rainwater harvesting, is a practice recognized by the most widely used green building rating system in the world, U.S. Green Building Council (USGBC). It conserves potable water and is a form of storm water volume control and pollutant load reduction. Commercial rainwater harvesting applications include schools, hospitals, shopping centers, government buildings, office buildings, factories and warehouses, farms and garden centers. By supplementing or eliminating the use of potable water in non-potable applications, "green" buildings not only reduce their municipal water bills, but also contribute to conserving a valuable, limited resource in our environment. Since rainwater is collected using existing structures, i.e., the roof and/or parking areas, rainwater harvesting has few negative environmental impacts such as increased runoff, and higher pollutant loads.

RAINWATER COLLECTION AND TREATMENT SYSTEM

ParkUSA® has a developed a Rainwater Collection and Treatment system. The Rainwater Collection and Treatment system is a proven, state-of-the-art system for water reclamation and re-use. The system processes rainwater for use in non-potable applications, such as cooling towers, water closets, and irrigation. The RainTrooper® systems are custom designed and built for the specific needs of each project. Features include:

- Pretreatment - Vortex Filtration
- Cistern - Rainwater Collection
- Cistern Pump System
- Rainwater Treatment System
- Day Tank
- Re-pressurization Booster Pumps
- RT Management System

For example - the new sector headquarters office building for United States Coast Guard at Ellington Air Field, located on the south east side of Houston, Texas. The RainTrooper® Rainwater Collection and Treatment System for the USCG Headquarters includes a pretreatment filter, 49,500-gallon cistern, cistern pump system, rainwater treatment system, dye and chlorine dosing system, 800-gallon day tank, re-pressurization booster pumps, and a state of the art management system. The pretreatment filter is designed so that coarse debris is removed prior to entering the cistern. The 49,500- gallon cistern consists of a battery of three 16,500 concrete structures with the first featuring a calming inlet and the final tank housing the cistern pumps. The cistern pumps are controlled by sensors that detect the pressure on the water going to the rainwater filter system. The filter system starts by feeding all the water through a 10-micron and then a 5-micron self-cleaning filter. The next step in the process involves the rain water passing through an active carbon filter. The filtration is completed by the water circulating past a UV filter for bacteria and ozone treatment. The water is then injected with a 12.5% chlorine solution and blue dye to indicate its non-potable status. The 800-gallon day tank is the next stop for the rain water. Here it is stored so that the building has a large retention of water if needed. From the day tank, the water then passes through the booster pump system to maintain 40 psi pressure on the building's non-potable water system.

The whole system is monitored and maintained by the Rainwater Management Panel. This panel utilizes a digital touch screen display to relay information about the systems operating conditions. It monitors the cistern tank and day tank levels, filter system water pressure, building water pressure, and usage of both rainwater from the cistern and city water from public works. The management panel also displays a visual alarm when the water levels in either the cistern or day tank fall below acceptable levels.

The RainTrooper® Rainwater Collection and Treatment System for the USCG Headquarters includes a pretreatment filter, 49,500-gallon cistern, cistern pump system, rainwater treatment system, dye and chlorine dosing system, 800-gallon day tank, re-pressurization booster pumps, and a state of the art management system.

CONTACT US

WWW.PARKUSA.COM

713-937-7602

ENG@PARKUSA.COM

7015 FAIRBANKS N. HOUSTON RD.
HOUSTON, TX 77040