

# GATEWAY WEST SUSTAINABLE I

ENVIRONMENTAL SYSTEMS, INC.  
BROOKFIELD, WISCONSIN



## Project Team

Client: Hunzinger Construction Company

Tenant: Environmental Systems, Inc.

Architect: Stephen Perry Smith Architects, Inc.

LEED PM: Stephen Perry Smith Architects, Inc.  
Sustainable Building Solutions

Contractor: Hunzinger Construction Company

CxA: Environmental Systems, Inc.

Energy Model: CDH Energy

Area: 34,108 GSF

Cost: Withheld

## **Gateway West Narrative**

Gateway West Sustainable I is a single story office building that is located in an existing business park and will be the future home to Environmental Systems, Inc.(ESI). The existing 193 acre business park is located in Brookfield with 23 Class A office and office/warehouse facilities currently within the park. Designed to achieve certification under the U.S. Green Building Councils (USGBC) Leadership in Energy and Environmental Design (LEED™) New Construction Rating system, this building will be a teaching tool that aligns with the tenant's mission to reduce the environmental impact of buildings through the application of sustainable technology and services.

Environmental Systems Inc. (ESI) designs, installs and supports commercial building systems for Building Controls & Automation, Security & Life Safety, and Energy Management. Formed in 1986, they are currently headquartered in Pewaukee, Wisconsin and conducts its business on a nationwide basis with locations in Green Bay, Houghton (U.P. of Michigan), and Chicago. Their focus is on system integration, practically applied technology, and life cycle services that help customers reduce their operating costs over the entire life of the facility thereby improving the sustainability of their facilities, operations and business. ESI designs and supports total building management systems with numerous proprietary product lines. All of their products can be implemented into new construction products or integrated with existing systems thereby allowing clients the ability to expand control of their building as technology advances. ESI provides training and certification for its customers, design professionals, and specialty contractors through its Environmental Systems University (ESU) and they will use this new facility as a showcase of their product lines. They will be the main tenant of the building and occupy over 75% of the building with the balance of the building being vacant lease space and future growth for ESI.

From the outset the team has worked on ways to implement "Practical Sustainable Design" within the project and have exhaustively reviewed numerous strategies with some being implemented into the final design. All sustainable design approaches were reviewed based on the first cost, return on investment, life-cycle cost, and innovation with all of these considerations carrying equal weight. Visitors to the new ESI Corporate Headquarters will witness practical applications of cutting edge building management systems and design that have been integrated in this new facility.

### **Sustainable Sites**

The new ESI building is being constructed in close proximity to the existing facility but will provide more amenities and easier access to the freeway system for current and future employees. The building is positioned on the north side of the site to maximize daylight and allows the occupants to take advantage of the natural wetland that is located to the east of the project. While the municipality dictated the quantity of parking stalls, we made a collective effort to be under this quantity and were granted approval based on our intent to reduce the heat island. A place to secure bicycles and men's and women's showers are provided to encourage alternate means of commuting to work. Our

landscape design takes advantage of the islands within the parking lot by using shade trees, and those areas, along with the balance of the green space, are planted using native plants that will set this building apart from adjacent facilities.

### **Water Efficiency**

All plantings are native to the region and will not require potable water once adapted. Once established, the maintenance costs and procedures will be dramatically reduced for this type of landscape. Within the building, the team selected water conserving fixtures that we have calculated water efficiency of 40% per year compared to code complying fixtures.

### **Energy and Atmosphere**

The most important aspect of a green building is a facility that is designed to be energy efficient, and this was achieved through a high performance building envelope, efficient, properly sized mechanical systems with heat recovery, efficient lighting design, and an integrated, open control system to control HVAC, lighting, metering, access, video surveillance and life safety.

The building envelope was designed with a continuous R-19 insulation on the exterior walls, R-30 insulation on the roof, and high performance glazing that contribute to achieving an envelope that is twenty percent (20%) better than ASHRAE 90.1-2004.

While the envelope helps the building achieve energy savings by reducing mechanical loads, our energy efficiency is further enhanced by an air handling unit with an energy recovery unit that is modeled to save over 300,000 btu/hr at design conditions, a condensing unit, a high efficiency boiler serving hydronic baseboard heat, and hydronic reheat coils on VAV boxes. Alternate strategies, including the common place roof top unit design, were reviewed but the team felt this was not an appropriate solution. We anticipate a favorable return on investment based on the lower life cycle cost and increased efficiency of this design, as well as improved occupant comfort.

The lighting design is based on providing a lower ambient light level in the open office while supplying LED task lights for all individual workstations, allowing occupants to tailor the lighting to their preferences and needs. Furthermore, all installed light fixtures are dimmable and will be controlled based on occupancy and ambient light sensors. All scheduling of lighting circuits are controlled by automated circuit breakers, which in turn, are controlled by the building automation system and integrated with the access control system for unoccupied operation.

Our energy model indicates the building will perform 35% better than the baseline code and the owner believes, the selected design, the advanced control sequences and the on-going measurement and analysis, continuous commissioning and fault detection software applications and proper preventative maintenance, will allow the building to exceed this calculation.

Currently our design team is reviewing the implementation of photovoltaic panels and we believe this will find its way into the project but will need to gain the approval of the local authority having jurisdiction before including this in our energy model.

### **Material and Resources**

During the design and construction phase of the project, the architect and contractor worked closely to select materials that would provide a strong environmental story. First, the buildings structural joist layout was altered to incorporate existing joists that were removed from another job that was completed a couple of years prior. Secondly, the architect's field brick was selected from the contractors existing overage stock from another job and will be fully implemented into the job with minimal supplemental brick being required. As the project is constructed, the team intends to review each material for environmental impact and will make decisions based on regional proximity and percentage of recycled content.

### **Indoor Environmental Quality**

The building design incorporates exterior views and daylighting for most spaces within the building through the use of full height windows with high visible light transmittance, daylight windows, and light tubes toward the middle of the building. To further extend the light into the building, all interior furniture partitions are low height (54" with the top 12" being glass).

Through the implementation of the energy recovery unit, the system will allow greater volumes of outside air to be used providing a high quality indoor environment, while doing so in an energy efficient manner. Further, controllability of the space through multiple VAV zones will allow occupants to control their environment via local sensors, their desktop Web browsers or mobile device-based Web clients. In addition to the VAV controllers, perimeter baseboard radiation provides consistent and uniform perimeter heating thereby providing greater occupant comfort. Humidification is provided by central humidifier to maintain proper indoor humidity levels for maximum occupant comfort.

The use of low emitting materials such as interior paints, adhesives, sealants, and carpet were selected to help provide a higher quality of indoor air for the contractors and visitors during construction and to maintain this air quality for building life. During construction, the contractor has a written procedure for maintaining a clean facility during construction and the team has implemented a written plan for a full building flush out prior to occupancy and have incorporated into our project schedule.

We believe the team has made every effort to design a building that will perform in the manner that it was modeled and think that some of the additional controls that the tenant is installing will help to increase our energy efficiency. After the completion of the project and review by the USGBC, the tenant will be maintaining this facility in a sustainable manner and will be continuing certification through the USGBC's LEED Existing Building rating system.