



KENT COUNTY RECYCLING CENTER



Location: Grand Rapids, Michigan
Size: 59,942 sq. ft.
Function: Recycling Center
Contract Amount: \$6 million
Date Completed: 2010
Architect: Design Plus, Inc.



Design+



The mantra is “Reduce, Reuse, and Recycle”. No truer words can be said than that when talking about the new Kent County Recycling Center at 977 Wealthy Street Grand Rapids, MI

The Department of Public Works is an enterprise funded department established by the Board of Commissioners to provide solid waste management services and water and sewer system construction, inspection, and maintenance under contract with some local units of government. The department is divided into four divisions: Utility Services, Finance and Accounting, Waste-to-Energy and Solid Waste.

The Kent County Department of Public Works is committed to a fully integrated solid waste management system. This system includes: waste reduction, reuse, recycling, an expanded education in resource recovery, incineration with energy recovery, composting and land filling, as outlined in the Kent County Solid Waste Management Plan.

The current recycling system for refuse disposal in Kent County aims to reduce the amount of solid waste sent for final disposal by volume reduction techniques and by various resource conservation and resource recovery programs. It also addresses collection processes and transportation needs that provide the most cost effective, efficient service.

The Solid Waste Division is divided into the following areas of operation: Resource Recovery (Recycling), Household Hazardous Waste (HHW), Materials Recycling Facility (MRF), Waste to Energy Facility, and Landfill and Transfer Station Operations

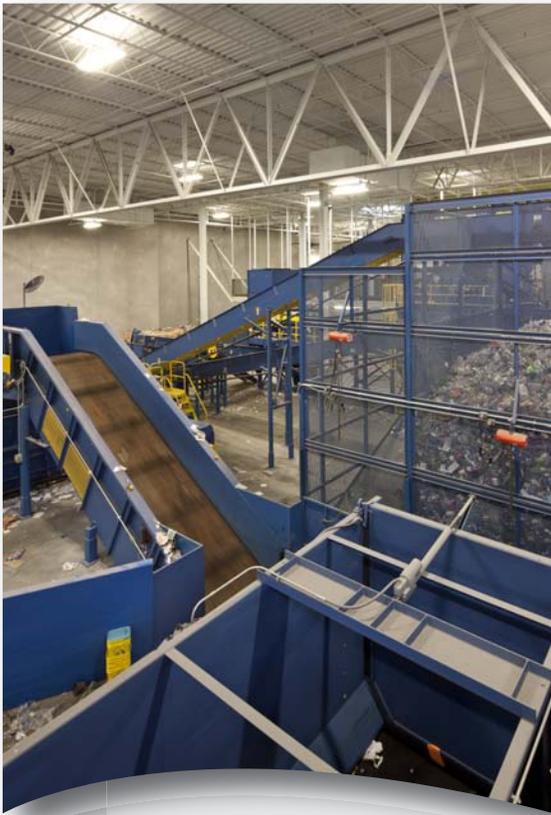
To serve the need of the Kent County Solid Waste Management Plan a team was commissioned to design, document and build for Kent County a new state of the art single stream-recycling facility to be located in Downtown Grand Rapids.

One of the first decisions in any project is to evaluate whether it is appropriate to even consider whether the project is a good candidate for green design and whether green design is a good fit for the client. Green building practices can substantially reduce or eliminate negative environmental impacts or improve existing unsustainable design, construction and operational practices. As an added benefit, green design measures reduced operation costs, enhance building marketability, increases worker productivity and reduces the potential liability resulting from indoor air quality problems. But with everything there are other considerations to take into account, such as, depending on the scope of the project and the complexity of the systems involved, there will be cost incurred in the evaluation and documentation of system performance, as well as the fundamental commissioning of these systems

Once the decision to be green or sustainable is made, the next decision is to evaluate whether it is appropriate to consider a project for LEED certification. LEED (The Leadership in Energy and Environmental Design) is a tool for green design to help design teams and Owners determine green project goals, identify green design strategies, measure and monitor progress and document success. The USGBC has developed a comprehensive suite of LEED assessment tools. The project is a viable candidate for LEED certification if it can meet all prerequisites and achieve the minimum points required in a given rating system. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

Choosing an appropriate site for an endeavor such as the Kent County Recycling Center was a critical decision that was not easily reached. Many sites were considered but it was the one at 977 Wealthy Street that afforded the most flexibility with the least amount of disruption. The definition of brownfield is: A piece of industrial or commercial property that is abandoned or underused and often environmentally contaminated, especially one considered as a potential site for redevelopment. Our site fit the definition and our needs to a tee.





The location of the new building has many benefits; it has at least 12 different types of services within a ½ mile radius of its location. The building also offers safe and secure bike storage near the entrance. These different aspects along with well-laid-out sidewalks, pedestrian crossings and traffic lights provide easy and convenient access to the everyday services one might need, while supporting the local businesses, and promoting physical and environmental health benefits for the entire community by encouraging biking and reducing automobile use.

The building will be approximately 54,904 square feet with a mezzanine level utilized for observation and educational purposes for area school districts as well as for general public. The building will be a precast concrete panel structure with conventionally framed roof framing system. Architectural metal panels with strategically placed aluminum glazing systems will comprise the front elevation.

Knowing the building would increase the amount of water running into the storm water drains, an underground detention system was developed that captures a large portion of the water that falls on the site. This detention system slowly releases the captured water with an open bottom design. The rainwater is discharged over a long period of time, permeating into the subsurface soils, conveying the storm water into groundwater aquifer.

The goal that Kent County Recycling Center had concerning water usage was simply “to reduce it” use less water for landscaping, use the right amount of water when washing hands and flushing toilets. The steps taken were quite simple also, use native and drought resistant landscaping to eliminate the need for water and expensive underground sprinklers. This water reduction will be passed along to the municipal water supplier demanding less potable water needed to be treated and piped to the site.

Water reduction practices are also implemented within the building. Low flow fixtures are able to reduce the water usage within the building by 45.7% a year. This ends up saving more than 18,999 gallons of water throughout the year.

The team focused on reducing the energy used in the building, by first reducing the energy needed in the building. The roof has a highly reflective coating that reduces the heat island effect associated with the roof. This lowers the temperature on the roof causes the need for less cooling within the building. Day-lighting also helped reduce the need for lighting by allowing the natural light to penetrate through the strategically placed windows.

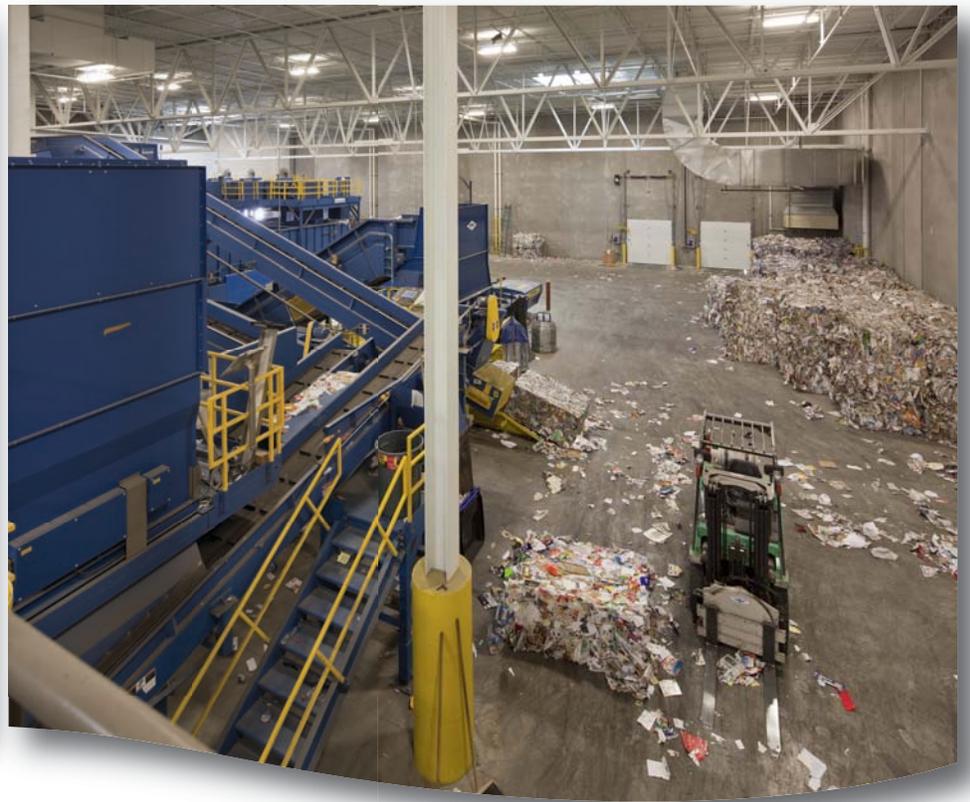
The energy performance was able to reach such efficiency by the careful selection of the systems used where they were placed. They even set goals regarding how they will be maintained. The systems also support the ozone protection protocols by not using CFC in their mechanical systems.

Building materials are very expensive to purchase and can be very energy intensive to harvest and manufacture. Building materials with recycled content were highly sought after. 30% of the materials used in the projects had some sort of recycled content. Using these recycled products allowed the Kent County Recycling Center to support the organizations who are finding new ways to use old stuff, encouraging innovative design and producing jobs within our communities. Using regional materials was also important as 60% of all the materials used on the site were extracted, processed, and manufactured within a 500 mile radius of the jobsite. This also supports local jobs in our communities while using local products, promoting less negative environmental impacts associated with transportation, and more local spending.

Construction activities can and does produce lots of waste. Instead of throwing all of that waste into a dumpster and contributing to the mountains of trash in our landfills the construction team was able to recycle or redirect 81% of the total construction waste from the project.

An indoor air quality management plan was developed to help promote a healthy facility. Throughout the construction process steps were taken to eliminate negative Indoor air quality coming from the different building processes. All HVAC systems were taped off to keep the air borne dust particles from entering the system. Lots of care was also taken to make sure that none of the absorptive materials came into contact with water, becoming contaminated with mold.





Many of the traditional materials used within a building contain chemicals that are harmful to one's health. While choosing materials such as paints, coatings, adhesives, carpet, and wood products the team demanded that these products meet the strict requirements of the South Coast Air Quality Management District Rule #1168, which specifies low or no volatile organic compounds (VOC's). These VOC's are harmful to the people who are installing them and also to the occupants that will be in contact with them after they have been installed.

Thermal comfort and exposure to daylight and the outside environment was also very important to the Kent County Recycling Center team. Strategic window placement and a well designed HVAC system allows occupants to be comfortable and use lots of natural light while being able to connect to the outside environment. Interior materials were selected for durability, flexibility, and ease of future reconfiguration. Colors used reflect an energetic and stimulating environment important to the longevity of the interior design balanced with the happiness and look of the environment has achieved.

