



America's First LEED Certified Public Transportation Facility

# Rapid Central Station



*THE RAPID*

# Why

Developing a green, sustainable, and environmentally conscious city is not a dream for the future. It's here and now. In Grand Rapids, *The Rapid* is playing a significant role in the area's emergence as one of the most sustainable cities in the U.S.\* The construction of Rapid Central Station has set new standards as the first LEED certified public transportation facility in the country.



# Green?

Making the best use of resources – from land and energy, to material selection and construction methods – is setting the foundation to create a dynamic revitalized urban center. It started with imaginative thinking and a dedicated drive to offer Grand Rapids area citizens a public transportation system that meets the demand for efficiency and comprehensive service. *The Rapid* had the added goal of providing these services while committing to social responsibility, protecting the environment, and being economically conscious.

\* Kent Portney, Tufts University, author of *Taking Sustainable Cities Seriously* rated Grand Rapids as the 25th most sustainable city in the United States.



## How Do You Measure Green

The U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED®) program is a leading-edge system for designing, constructing, operating, and certifying the greenest buildings in the world. LEED is transforming the marketplace by increasing recognition for high-performance buildings, providing incentives for healthy and sustainable buildings, setting higher standards for building performance, and affecting building guidelines.

The LEED rating system is divided into environmental categories in which points can be earned.

- Site Planning
- Water Management
- Energy Management
- Material Use
- Indoor Environmental Air Quality
- Innovation & Design Process

For more information visit the USGBC web site: [www.usgbc.org](http://www.usgbc.org)

## The Benefits of Green

A well-designed green building improves indoor environmental quality, provides flexibility, and saves significant resources in construction, operation, and maintenance. It also reduces waste and cuts life-cycle costs compared to conventional designs. By building green, Rapid Central Station lowers negative environmental impacts and provides a healthy indoor space.

- Relatively small first-cost investment in the facility is offset by lower annual energy and other operating costs.
- The building design uses environmentally sound materials, and invests in "daylighting" for improved indoor environmental quality.
- By giving preference to products with a good environmental track record, green buildings reduce regional air and water pollution.



# Creating America's First LEED Certified Public Transportation Facility

*The Rapid's* LEED certification was earned not only for conserving energy and controlling operational costs, but also for reusing an existing site, reducing the need for automobiles, and protecting many natural resources.

## Site Planning and Sustainability

The revitalization of a brownfield location contributed toward opening a new area for growth and development in downtown Grand Rapids. It expanded the terminal capacity and allowed *The Rapid* to maintain a hub closer to the city's center. Expansion of Rapid Central Station has also allowed the incorporation of intercity bus services, as well as the option of adding Amtrak train service to the terminal in the future.



## What are brownfields?

Brownfield sites are possibly contaminated property that could complicate or discourage reuse. The EPA's brownfields program focuses on revitalizing land for productive use, taking development pressures off undeveloped land, and improving and protecting the environment.



### Reduced Need for Automobile Use

Alternative transportation solutions are a key credit component towards creating a sustainable site. As the region's transportation expert, *The Rapid* hopes to serve as an example of how businesses can develop properties with a view towards maintaining a close proximity to public transportation services, managing overall parking capacity, and providing bicycle storage and infrastructure for car and van pooling.



### Stormwater Management

By managing stormwater runoff, *The Rapid* significantly reduces potential negative impact on local water sources. The vegetated roof over the main building structure collects and filters the "first flush" of rainfall, and also provides necessary irrigation for the roof plants. Pervious pavement allows stormwater to seep into the ground to recharge the groundwater and reduces runoff that might otherwise go directly into the sewer. Finally, beneath the bus platform is a mechanical filtration device that removes heavy concentrations of sediments from stormwater, which are a major contributor to stormwater pollution.



### Landscape and Exterior Design

Materials used for roofing and paving can contribute significantly to increased heat in urban areas – called "heat island effect." These urban areas can have air temperatures up to 10°F warmer than the surrounding natural land cover. The impact at Rapid Central Station was minimized by installing a 100' x 600' canopied roof over the bus platform that reflects solar light as well as shades passengers. Additionally, the "green" vegetated roof over the main building adds a layer of cost-saving insulation to the facility.

Drought tolerant plants and an irrigation system that's a 50% improvement over traditional systems were used to finish the exterior property.





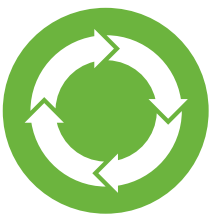
# Sometimes the best part of a sustainable building is what you don't see.

Commuters who pass through Rapid Central Station experience a dynamic, inviting, and comfortable environment. But what they don't see are the advanced technologies that have made it highly efficient and healthy – not only in conserving energy and controlling operational costs, but protecting natural resources and the surrounding environment.



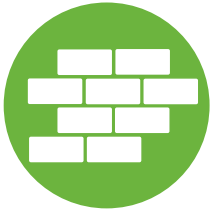
## Energy

Optimizing energy efficiency in Rapid Central Station is the most effective way to save money in operating costs over the life of the facility. Reducing energy usage also minimizes air pollution to our region. Building insulation, window sizes and type, the green roof, exterior building color, and placement of shade trees all positively impacted the size and type of heating/cooling system required. In addition, the facility design optimizes interior daylight – using windows and light-colored interior paint – to reduce the need to turn on lights. Motion sensors also help reduce lighting demand.



## Indoor Air Quality

Indoor air quality is a critical component of healthy, green buildings. Many building components contain volatile organic compounds (VOCs) which can create poor indoor air conditions. The selection of materials – including paint, cabinetry, adhesives, plywood, and flooring – with very low levels of these compounds all contributed towards creating a healthier building. In addition, building components were protected prior to and during installation to reduce the risk of mold growth and dust contamination.



## Material

Building components can have a major impact on the quality of the building. How and where the materials are produced also impacts the environment. Architects took special steps towards specifying local and Midwest materials sourced within 500 miles of the site to reduce pollution generated by transporting building supplies long distances. This also offers economic support for local and regional products and companies.

The use of renewable resources and recycled content contributed significantly towards LEED certification and reduced the need to harvest and mine virgin materials. The terrazzo floor, covering much of the public areas of Rapid Central Station, made use of recycled glass, to provide a dramatic, yet durable, flooring surface. It is expected to last for decades with little or no maintenance other than cleaning. Inside the walls, a large percentage of the steel structure is made of recycled automobiles and the structural concrete also contains high levels of recycled content.

By developing a construction waste management plan, an astounding 96% of all site materials used in the demolition and construction was recycled back towards a manufacturing process or other appropriate sites. Additionally, early planning contributed to less waste throughout the project.



## Innovation/Design

Expansive low-E (low-emittance) windows throughout the main terminal facilitate more natural environments (called daylighting), overhangs shade the interior from direct sun rays, and motion-sensor light controls dramatically reduce energy costs while creating a bright and positive atmosphere throughout the terminal.





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## ProgressiveAE

The successful development of Rapid Central Station is due in large part to the efforts of Progressive AE – an award-winning architecture, engineering, construction, and consulting firm nationally recognized for outstanding design and execution. Progressive AE is dedicated to environmental stewardship and is respected for its leadership role in educating, training, and consulting organizations on the “triple bottom line” benefits – economic, social, and environmental – of sustainable design.



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