



Detroit, Michigan

Recycling at Automotive Site Spurs Revitalization

A Construction and Demolition Waste Reduction Success Story



The former automotive site before cleanup and demolition activities.

Sustainable reuse of brownfields properties involves an emphasis on reducing the environmental impact of building renovation. One of the most effective ways of reducing these impacts is the recycling of construction and demolition (C&D) waste. Recycling of C&D waste can prevent loss of useful property, wasted materials, and embodied energy. It also helps to conserve raw materials through the use of existing materials, conserves energy and water, and reduces the production of greenhouse gas emissions and other pollutants. Furthermore, by providing materials to local vendors and processors, C&D recycling can create employment and economic activity that helps sustain local economies.

Project Highlights

In December 2005, the cleanup of a 2-acre, former automotive property in Detroit, Michigan was made possible through the leadership of a local nonprofit organization and funding assistance provided by the U.S. Environmental Protection Agency (EPA), in-kind services, and C&D waste recycling activities. Working within a tight budget, Focus: HOPE Revitalization conducted demolition and cleanup activities on the brownfields property for its intended reuse as a parking lot for a planned mixed-use development on the adjacent property.

Construction and Demolition Debris

Construction and demolition (C&D) debris is produced during new construction, renovation, and demolition of buildings and structures. C&D debris includes bricks, concrete, masonry, soil, rocks, lumber, paving materials, shingles, glass, plastics, aluminum (including siding), steel, drywall, insulation, asphalt roofing materials, electrical materials, plumbing fixtures, vinyl siding, corrugated cardboard, and tree stumps.

C&D materials can be recovered through reuse and recycling. In order for materials to be reusable, contractors generally must remove them intact (e.g., windows and frames, plumbing fixtures, floor and ceiling tiles) or in large pieces (e.g., drywall, lumber). In order to be recyclable, materials must be separated from contaminants (e.g., trash, nails, and broken glass).

C&D waste recycling activities essentially made the project feasible by reducing the total project cost by 20 percent, a savings of \$150,000, through the recycling of approximately 1,200 tons of materials and over 13,000 gallons of liquid waste water. The property's reuse has provided a catalyst to revitalize the surrounding neighborhood.

Background

HOPE Revitalization is a nonprofit corporation formed by Focus: HOPE, a 40-year old nonprofit civil and human rights organization in the City of Detroit. As a primary goal of Focus: HOPE Revitalization's community development initiative, the organization is spurring redevelopment in the neighborhood surrounding its campus, which has been devastated by blighting influences and a 1997 tornado that destroyed a number of homes.

Focus: HOPE Revitalization recognized that the 2-acre property with an abandoned, 80,000-square foot building, once used for the manufacturing of heavy sheet metal stamping presses for the automotive industry, was a blight to the community. A five-phase development project is underway for the area surrounding the campus; the cleanup and demolition of the abandoned industrial property was the critical first phase to redeveloping the area.

Process

Focus Hope: Revitalization obtained the abandoned automotive property through a donation from U.S. Real Estate. EPA Assessment grant funding through Wayne County and EPA cleanup funding through the City of Detroit's Revolving Loan Fund (RLF) program and a direct cleanup grant to Focus: HOPE Revitalization allowed for the assessment and cleanup of the property. The Phase I and Phase II environmental assessments revealed polychlorinated biphenyl (PCB), asbestos, mercury, sodium hydroxide, and residual polynuclear aromatic hydrocarbon (PNA) contamination which required cleanup of the property. Cleanup and demolition activities commenced in August 2005 and were completed in December 2005.

As part of the cleanup and demolition process, Focus: HOPE Revitalization incorporated C&D waste recycling as a key component, since the organization is keenly aware of the need for sustainability in all of its activities. Neither the local nor state government required C&D waste recycling for the project. To ensure that recycling was built into the project, Focus: HOPE Revitalization included C&D waste recycling early in the project design process by explicitly requiring specifications for recycling as part of the Request for Qualifications (RFQs) for environmental consulting services. As a result, the organization hired an environmental consultant, AKT Peerless Environmental Services, to provide oversight and a cleanup contractor experienced in C&D waste recycling.

Project Funding

EPA Assessment grant funding from Wayne County.....	\$30,000
EPA Cleanup grant funding to Focus: HOPE Revitalization	\$200,000
EPA RLF loan from the City of Detroit	\$350,000
In-kind expenditures from Focus:HOPE Revitalization.....	\$20,000
In-kind services from AKT Peerless	\$15,000
Material reuse savings through C&D material reuse	\$50,000
Disposal cost savings through C&D debris recycling	\$100,000



Demolition and cleanup complete at the former automotive site.

To implement and enforce the C&D waste recycling strategy, the environmental consultant provided daily monitoring and inspection oversight to verify material quantities and collect daily manifests. This attention to detail was extremely important to the success of the project due to a tight budget and the need to maximize the value of the steel and other recyclable materials (e.g., concrete, waste liquids and oils, light ballasts, and tubes/vapor bulbs) to offset costs. Focus: HOPE Revitalization received a credit for the value of the steel sold for reclamation, therefore, clear and accurate monitoring of the quantities was critical to receiving the maximum credit. The consultant and cleanup contractor worked diligently to maximize the value of the credit and extend the available budget by taking special care in segregating contaminated from non-contaminated areas so that overall disposal costs could be minimized.

Because the property was a brownfield, additional precautions were necessary to protect workers during the C&D process as well as to ensure that no exposure from demolition dust and debris would impact the public and surrounding community. To manage these issues, the cleanup contractor used water throughout the project for dust suppression and conducted air monitoring as necessary. Further, all demolition materials were evaluated through analytical testing and decontaminated, as necessary, and/or source separated prior to off-site disposal.

Results

As a result of the C&D waste recycling and reuse efforts of Focus: HOPE Revitalization and its team, approximately 1,200 tons of materials and over 13,000 gallons of liquid waste water were



Recycling of steel at the former automotive site.

Recycled Materials from the Former Automotive Site

- 738 tons of steel
- 469 tons of concrete footings and foundations
- 1,760 cubic yards of floor slab
- 13,100 gallons of liquid from an underground storage tank (UST)
- One 16,000-gallon steel UST
- 320 kilograms of PCB-containing light ballasts
- 101 kilograms PCB-containing capacitors
- 478 kilograms of non-PCB transformer, including oils
- 225 circular mercury vapor bulbs
- 176 fluorescent bulbs
- 110 gallons (two drums) of petroleum distillates/mineral spirits
- One 55-gallon drum of wastewater; two 55-gallon drums of waste oil; two 30-gallon drums of waste corrosive liquid; and 60 gallons of hydraulic oil.

Key Lessons Learned

- Project proved that brownfields cleanup and demolition is feasible and that recycling can be a valuable component of the cleanup and demolition effort.
- It is essential to have a committed environmental consultant providing oversight as well as a contractor who is familiar with the markets and methods for recycling.

separated from non-recyclable demolition debris and reclaimed and thereby diverted from landfills. Reuse of portions of the existing footings and foundations helped stabilize site soils. Because the nonprofit was working within such a tight project budget, the \$150,000 or 20 percent of the total project costs saved through material reuse and avoided disposal costs were critical to the project's success. Essentially, the recycling effort made this project feasible, by reducing the costs of the overall cleanup and demolition. See the sidebar for a detailed breakout of materials separated, transported off-site, and recycled.

Besides the inherit smart growth benefits associated with the redevelopment of previously used urban sites, the reuse of this former automotive property is providing a catalyst to neighborhood revitalization. A site that was previously a blight to the community now provides much needed parking for the area. As the first phase of a five-phase revitalization strategy, this C&D brownfields project paved the way for the construction of a nearby 55 unit apartment building for low income senior citizens which was completed in February 2007. These accomplishments resulted in the designation of the area as a "Cool Cities Neighborhood" by the State of Michigan, including a \$100,000 grant to develop a park, which will further catalyze the revitalization of the community.

More information on Construction and Demolition Debris and brownfields can be obtained at http://www.epa.gov/brownfields/tools/tti_assess_cleanup.htm#construction or by contacting the EPA Office of Brownfields Cleanup and Redevelopment (OBCR) at (202) 566-2777.

The EPA Brownfields Program provides grants to fund environmental assessment, cleanup, and job training activities. The Program is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields.