

**Project Information**

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- 6) Project Title:** An Innovative Program to Recycling Construction and Demolition Waste
- 7) Grant Request Amount:** \$99,200
- 8) Length of project (months):** Twenty Four

\_\_\_\_\_  
Authorizing Signature

Director  
Title

## **PROJECT ABSTRACT**

(No more than 20 lines)

The purpose of this project is to reduce the amount of construction and demolition (C&D) waste entering the waste stream and to increase the reuse of C&D waste material through implementation of an innovative solid waste management project in Brevard County. This will be accomplished by the creation of a building material reuse center, which will be developed, opened, and operated during the project duration. The material reuse center will be an expansion of a current reuse facility operated by Habitat for Humanity. The project will involve the coordinated efforts of the Brevard County Solid Waste Management Department, the South Brevard Habitat for Humanity, and the Florida Institute of Technology civil engineering department. These three organizations will work together to divert C&D waste at construction sites and recover C&D waste at landfills so that they can be sold by Habitat for Humanity in the expanded reuse center. The requested funds will be used for equipment for the onsite collection, storage, and transportation of diverted C&D waste materials, to develop expanded retail space to store and sell the recovered C&D materials, and to manage the expansion of the reuse program.

Many innovative concepts will be developed and demonstrated during this project. First, a unique mix of organizations and skills are brought together to address the reuse problem. Second, a model program will be developed that can be implemented by other counties in cooperation with their local Habitat for Humanity. Third, a volunteer labor force directed by Habitat for Humanity will be used to divert and or recover waste construction materials. Lastly, a project website will be developed as an educational tool where the model program information will be presented in a distance learning format.

## **PROJECT DESCRIPTION**

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Currently, in Brevard County, some C&D waste is recycled into boiler fuel, mulch, compost, soil, and aggregates. Some concrete material is crushed and reused in the building of landfill roads and a small amount of C&D material is reused through the existing Habitat for Humanity retail store. The existing reuse store will accumulate donations from builders and is open two days per week to sell the material. A goal of this project is to increase the amount of reuse material being handled, so that the reuse store will collect and sale or use enough material to justify daily operation.

The use of building material reuse centers is a rapidly increasing method of handling construction and demolition waste. There are currently more than 200 building material reuse centers nationwide. A representative of the South Brevard Habitat for Humanity has stated that there are six retail outlet stores in Florida operated by different Habitat for Humanity affiliates where recovered construction materials are sold. These existing stores have various arrangements with the county solid waste authorities. Each existing retail outlet store will be visited to determine the types of material being handled, the sources of the material, the procedures used to recover and transport the material, and how the store fits into the county solid waste management system. Other reuse stores, such as the Palm Beach County BERC II, will also be studied. This information will be used as a starting point for the planned activities in Brevard County. The purpose of the expanded reuse center will be to become a part of an integrated waste management system to handle construction and demolition waste and at the same time provide a revenue stream and cheap materials for Habitat for Humanity home construction projects.

The types of materials to be handled and methods for recovery and storage will be developed for each participating group. There are two participating landfills, the Brevard County class three landfill and the Florida Recyclers, Inc. class three landfill, both are located in Melbourne Florida. There are many participating construction contractors. Most of the larger homebuilders working in the Melbourne and Palm Bay areas are already supporters of Habitat for Humanity and they will be supporting this project. They already donate new materials and labor for the home construction projects; one builder has already donated three completed homes. Other participating organizations include Associated Builders and Contractors, the Florida Tech Construction Industry Advisory Board (CIAB), and the National Association of Women in Construction (NAWIC). All of the construction industry representatives have expressed an interest in this project and will participate.

A variety of liability issues will be addressed to properly implement recovery activities. The liability to participating landfills, construction site owners, the solid waste authority and Habitat for Humanity must be minimized. Habitat for Humanity volunteer workers will be used to collect, process, transport, and sell the recovered construction material. A technical advisory group will be established that will provide input from all interested parties. The group will include a representative from each landfill facility, construction contractors, waste haulers, and project personnel.

The experiences gained will be used to develop a model program to help other counties work with their local Habitat for Humanity organizations to open reuse stores selling recovered construction material.

## **Criteria 1: TECHNOLOGIES**

### **Sub-criteria 1 – Not in common use in Florida**

The use of building material reuse centers is a rapidly increasing method of handling construction and demolition waste. There are currently more than 200 building materials reuse centers nationwide. A representative of the South Brevard Habitat for Humanity has stated that there are six retail outlet stores in Florida operated by different Habitat for Humanity affiliates where recovered construction materials are sold. These existing stores have various arrangements with the county solid waste authorities. This project will create a reuse store that is operated by South Brevard Habitat for Humanity and is an integral part of the Brevard County solid waste management system. This would be an uncommon arrangement in Florida.

### **Sub-criteria 2 – Novel application of an existing technology or process**

There are three novel applications of existing processes occurring with this project. One is the partnering of a county solid waste authority, the South Brevard Habitat for Humanity, and a university research group to create an integrated waste management system to manage C&D waste through recovery and reuse. Similar partnering of resources and personal has been used to address many problems within and outside of solid waste management, but this approach has not been used for this application before. The second novel application is the use of a volunteer labor force to collect, transport, sort, and sell the reusable materials that are recovered. Habitat for Humanity has a distinguished history of community support and is capable of managing large numbers of volunteers performing multiple tasks simultaneously. They will make an excellent project partner who can draw from their vast experiences to address volunteer issues as they arise. Volunteers have been used in related solid waste management projects like litter control along highways, beach and river cleanups, and litter control and recycling activities at fairs and public events, but not to conduct the daily operations of a solid waste system. Lastly, the use of retail stores to sell materials recovered or diverted from the C&D waste stream is an existing process nationwide but would be considered somewhat novel in Florida.

### **Sub-criteria 3 – Overcoming obstacles to recycling/waste reduction in new or innovative ways**

Obvious obstacles exist with this type of reuse system. They are the liability to participants, the ability to manage the volunteer labor force, and getting the construction industry to participate. The liability to participating landfills, construction site owners, the solid waste authority, and Habitat for Humanity will be addressed. Habitat for Humanity has a volunteer lawyer who helps with these matters that are very similar to the liability issues that exist at any of the house build sites where volunteers work. Habitat for Humanity has a proven track record of managing large numbers of volunteers performing multiple tasks. An innovative incentive system will be developed for builders, contractors, and private landfill operators to encourage reuse and diversion activities. Private enterprise responds to new opportunities to make money. A process will be created whereby all participating parties will see a positive monetary return through decreased disposal costs and income tax incentives associated with giving to charities.

## **Criteria 2: TARGETS**

This project is targeting construction and demolition waste, which is one of the targeted materials or sectors. The project participants will divert materials from the waste stream at construction sites and recover materials in the waste stream to be sold for reuse by the public, builders, and others. This project will develop waste diversion and waste reduction processes that are considered more desirable than recycling.

Upon completion of this project, a permanent solid waste management option for C&D waste will exist based upon material diversion and reuse. This will create a separate private enterprise that should over time become a larger and more important management strategy for Brevard County C&D waste management. This program will be expanded through other Habitat for Humanity organizations statewide and could have a significant impact on C&D waste management in the State of Florida.

### **Criteria 3: BENEFITS**

#### **Sub-criteria 1 - Environmental Benefits (15 points)**

- **Methodology** This project focuses on source reduction, waste diversion, and reuse. Source reduction will occur at building sites because usable building materials will be segregated from the waste stream before disposal, stored, and transported to the retail store to be sold or used. These materials have not entered the municipal waste stream, thereby reducing the quantity of the waste stream and providing source reduction. The useful life of building materials will be extended since they are not disposed in the landfill, but are reused, which also constitutes source reduction. At landfill sites, usable building materials will be recovered from the waste stream by volunteers and transported to the retail outlet store. Since this material is being managed without disposal in the landfill, diversion is occurring. Whether the material comes from a building construction site or landfill, the material will be used as a building material in other construction activities, therefore reuse is occurring. The recovered building material will not be recycled into other less valuable materials like mulch or fill.
- **Toxicity** By reusing building materials, the pollution associated with the production of raw materials, manufacturing new building products from raw materials, and transporting both raw materials and new building products will be reduced. By extending the life of building materials, unwanted toxins associated with paints, glues, tarpaper, shingles, and other building products will be kept out of disposal facilities for a longer periods of time and disposed of at a lower rate.

#### **Sub-criteria 2 – Economic Benefits (10 Points)**

Reuse allows construction material that would otherwise be buried in a landfill at considerable costs or recycled into a low value material like mulch, compost, or fill to be marketed as a much higher value material. For instance, clean fill derived from concrete has a value of approximately \$5/ton but it costs \$2.50/ton to crush it. One ton of concrete blocks, typically referred to as a cube, is approximately 72 blocks and has a retail value of \$54 at \$0.75/block. New blocks from Rinker Construction Products are approximately \$1.15 per block. A similar example can be made by comparing the value of reused wood and wood products versus the value of mulch. For some materials, like tarpaper and roofing, few recycling options exist, so selling them as a recovered material may represent the only viable option other than landfilling.

#### **Sub-criteria 3 – Cost Effectiveness (10 Points)**

*Reduction in Processing Costs.* The volunteers working on this project and at Habitat for Humanity retail stores will be donating thousands of hours that are directed towards improving recovery and diversion of construction materials. The increase in reuse with no associated costs to Brevard County Solid Waste Management Department will result in lower operating costs.

*Payback period.* It is difficult to project how much construction material will be recovered and reused and how much landfill space will be saved as a result of this project. If during the next five years, 10 tons/wk of material were diverted, the costs savings in landfill space would be \$78,000 at \$30/ton disposal costs. The revenue generated from selling the recovered material would be many times the disposal costs with a payback period of one to three years.

*Sustainability.* South Brevard Habitat for Humanity has built 72 homes so far, seven in 2002. Their five-year plan is to build 75 additional homes, which will require raising five million dollars. This project will help them generate the financial resources and the building materials needed.

## **Criteria 4: TRANSFERABILITY**

(1 page)

### **Sub-criteria 1 – Transferability of technology and processes (5 points)**

There are no limiting factors, such as demographics, geographic, or environmental factors that could limit the ability of other Habitat for Humanity organizations from implementing the procedures developed in this study. Currently, Habitat for Humanity exists in every county in Florida. Some counties, like Brevard have more than one group. In Brevard County there is the South Brevard Habitat for Humanity and in north Brevard there is the Space Coast Habitat for Humanity.

Many recycling activities, such as curbside collection of recyclables, materials recovery facilities, or composting processes require large populations to make the management practice economical. But, the availability of construction material and the markets for recovered material should be equally as strong in lower population counties as it is in larger counties. Therefore county size or population will not inhibit the local organizations for implementing similar retail stores.

### **Sub-criteria 2 – How project will promote transferability (5 points)**

In the later phases of this project all Habitat for Humanity organizations in the state will be contacted as well as all county recycling coordinators. The information and procedures developed during this project will be made available to them. The development of the project website, an educational tool where the step by step sequences that have occurred in this project will be presented in a distance learning format, should enable other counties to duplicate this effort.

Currently, Habitat for Humanity operates through a single international organization located in Georgia. The Habitat for Humanity organizational model lacks regional or statewide organization but only exists at the local level, therefore promoting this concept at a regional level will require an extensive level of effort to organize and promote.

## **Criteria 5: LOCAL SUPPORT**

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Habitat for Humanity is committed to expand their retail store selling recovered construction materials. Kay Bruce is the coordinator of the work group responsible for this activity and a volunteer worker. They have created approximately 45,000 ft<sup>2</sup> of floor space for the retail store that includes a construction material storage area and the loading facility in addition to the retail space. Habitat has already invested \$7,500 to modify the floor space and open the retail space. Additionally, a store manager staff position has been created, at an annual cost of \$28,000. Kay is planning on needing 5,200 volunteer hours to operate the retail store. Habitat for Humanity volunteers will be responsible for stocking, pricing, and selling the items in the retail store. There will also be project volunteers working at construction sites and local landfills collecting the construction material and providing transportation. For budgeting purposes, the volunteer hours will be assigned a value of \$5.00 per hour, which represents an annual cost of \$26,000 for labor.

The Brevard County Recycling Coordinator will work with the project to assist with coordination and implementation of the project. This will entail approximately 5% of her time over the twenty-four month period, an estimated \$6,240 in-kind service.

**BUDGET**

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