Pilot Methods for Recycling Program Design

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Saint Stephen

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Project Description

The Tulane Student Chapter of the American Society of Civil Engineers, ASCE, has offered to prepare a design for a recycling program at St. Stephen located on Napoleon Ave in New Orleans, LA. St. Stephen has expressed an interest in recycling recoverable paper products produced in their classrooms, library, offices and cafeteria. The school, with a current faculty of 18, has minimal projected growth based on space and resource limitations and has a current enrollment of approximately 260 students. The primary project goals beyond waste diversion of paper, cardboard, and magazines produced at St. Stephen include operation effort reduction and cost optimization.

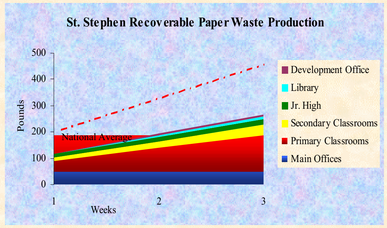
Project Value:

Recycling in New Orleans: The project timing is significant because many New Orleans schools have stopped recycling due to increasing costs of recycling bins and pick-up, but they are still enthusiastic about recycling and including recycling in their environmental education programs.

Tulane and ASCE benefits: Through the efforts of Physical Plant and the Green Club, Tulane University has come to exemplify the effectiveness of recycling. This project involving civil and environmental engineering students at Tulane, will provide local educational institutions with the means to recycle, while teaching Tulane students about the process of engineering design.

Collection of Design Data

ASCE designed a quantification test to obtain an estimate of the recoverable paper waste produced by St. Stephen. Temporary waste collection receptacles were placed in half of the classrooms, the offices and the library. Each week, the bins were emptied and assessed for content and volume. The testing continued from November 15, 1999 through December 13, 1999 but waste collection was continued throughout the design phase so that St. Stephen could continue recycling. The results of the quantification test, assuming a safety factor of 1.5, were compared to national averages of waste production to develop the final basis for the program design.



The quantification test results indicate that St. Stephen produces an average of 31 ft^3 or 96lb. of target recoverable waste per week. Most of the waste recovered was white paper, glossy brochures and magazines, with some newspaper and cardboard. These estimates do not include the cardboard waste produced by the cafeteria and the unrepresentative data recorded during the first week of collection that resulted when St. Stephen emptied stockpiles of recyclable material into the bins.

Even after the safety factor was applied, resulting in 144lbs. of target waste production per week, St. Stephen produces waste amounts much smaller than national average projections of 167lbs. This comparison validates the use of a quantification test in future programs.

Development of Program Evaluation Criteria

ASCE examined several existing recycling programs to identify recycling program features that significantly influence the success of the design. Using this review a general list of criteria were developed to evaluate all of the program design alternatives.

The evaluation criteria for the ASCE recycling program include but are not limited to:

- •Client Preferences
- •Operability
- •Aesthetics
- •Space and Volume Requirements
- •Projected Cost
- •Long-term Applicability

Recycling Company Options

The choice of a preferred recycling collection company defined the remaining design parameters for the program by placing limitations on acceptable recoverable materials, waste sorting requirements, and storage capacity requirements (regulated by collection frequency). Exhaustive inquiries were made of all known available recycling companies, and each company was evaluated according to the project criteria..

	Bin Supply			Waste Accepted						
Company	Contracts w/ Schools	Room Size	Storage Size	Mixed Paper	White Paper	Magazines	Cardboard	Newspaper	Collection Frequency	Bin Rental and Pick Up Fees
BFI	X	X	X	X	X	X	X	X	4/month	85$/month-building
Duncan Paper Co.	X				X	X	X	X	weight	
Legacy Recycling	X	X			X				2/month	
Southeast Paper	X	X						X	1/month	
Vista Fibers *									2/month	
Waste Management	X	X					X		4/month	75$/month

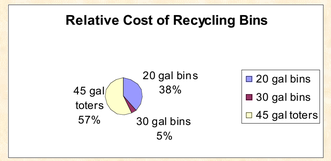
ASCE recommends that Legacy Project Recycling be used to collect and remove waste from St. Stephen. ASCE will supply St Stephens with money for the inside bin cost, and Legacy will supply St Stephens with a 104 gal toter for the outside collection. Legacy requires a weight of 104 lbs of white paper for a free biweekly (once every two weeks) collection, based on St. Stephen's production rates of white paper this set up proves to be the most efficient.

Recyclable Waste Storage

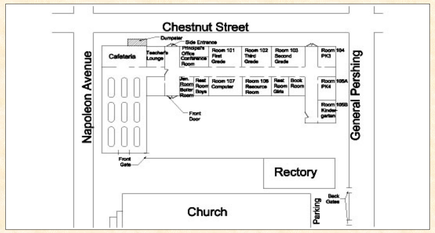
After reviewing the design requirements established by the quantification test, recycling collector choice, and project criteria, ASCE identified several waste storage needs and visited container suppliers to inventory the availability of storage bins. Each possible bin was evaluated according to the project criteria.

ASCE recommends the use of 3 different types of storage containers for the St. Stephen recycling program:

20 gal: temporary storage of white paper for each room
30 gal: temporary storage of white paper for offices and
45 gal: temporary hallway storage of white paper



The students will transport the white paper from the class rooms into the hall toters. Twice a week the older students or teachers will transport the filled toters to the central storage unit. At the central storage unit, the students will dump the white paper into the 104 gal toter for Legacy to pick up. The janitorial staff will be responsible for collecting and putting out cans, newspapers and magazines from the teachers' lounge and work room for city curbside recycling.



Central Storage Facility

ASCE used a facility site layout provided by St. Stephen to identify potential locations for a central storage facility that will house the collected recoverable materials between recycling company collection visits. The potential sites were then visited and evaluated according to the project criteria.

ASCE recommends that St. Stephen use a gated dumpster area located outside of the cafeteria on Chestnut St. for a central storage facility and recyclable transfer station. Currently this site is being used to store cardboard that never exceeds more than 1/10 of the area and has ample room for the required storage containers. The site is located next to a school entrance on a street curb, increasing accessibility and operability for the collection company. The area is also gated with a fence to secure the site.

Accomplishments

1) Finalize and negotiate the design of the program to minimize the effort and increase the efficiency of operation. We have designed the program so that everyone in the school contributes to its operation. It is a joint effort of the students, teachers, and school staff.

2) ASCE was able to donate money for the bin purchases, and Legacy Project agreed to offer their recycling services to St Stephens.

3) ASCE to extended the opportunity to recycle to other educational institutions. For the program to be successful, the schools must be extremely interested in using a recycling program. To identify a new school, ASCE held a poster competition for the ASCE recycling program design services. The competition served as an educational tool for New Orleans students, generating publicity for the project, and it served as a filter for schools not committed to program participation. McMain Magnet School won the contest. Since then we have been working on setting up recycling and an environmental organization at the school. On two different occasions members of ASCE have gone to McMain to meet with the students and promote environmental interest.