

Success in Residential Construction Recycling

Rocky Ridge Recycling Pilot Project



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In 1997, residential development in the City of Calgary resulted in the construction of approximately 7000 new homes. The scrap material generated by this construction, approximately 2.5 tonnes per house, is dominated by cardboard, concrete, wood, metal, gypsum wallboard and masonry. Most of this material is disposed of in landfills. But, in Northwest Calgary, a land developer, new home builders, a waste management company and the Calgary Region Home Builders Association are establishing a high standard of waste minimization for their industry.

In a cooperative pilot project they successfully diverted from landfill 458,312 kg, or 73 percent, of the waste generated during the construction of 191 new homes. Wood, mixed metals, wallboard, and corrugated cardboard were separated on the development site and shipped off site for reuse or recycling at costs which are competitive with traditional landfill disposal.

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History

In 1995 the Calgary Region Home Builders Association (CRHBA) began to take an active role in minimizing waste generated from new home construction. The Association adopted a mission statement committing to the promotion of waste minimization practices in the industry and a sub-committee was established to address waste management issues.

By 1997 the sub-committee had teamed up with Marquis Communities and Allwaste Systems to run a pilot project to test the feasibility of reducing waste in Marquis Rocky Ridge Ranch development. Marquis is a residential land developer with several projects in the City of Calgary. Marquis was already looking at ways to maintain cleaner development sites. After examining other sites in North America the opportunity to participate in a pilot project in Calgary fit well with their approach to doing business.

Allwaste offers waste management services which routinely include wood recycling and reuse operations in their yard in southwest Calgary. A number of home builders working within the development including Homes by Avi, Mapeland Homes, Jayman Master Builder, Cedarglen Group, Stepper Homes and Sterling Homes also volunteered to participate. All of the builders have been actively working in a number of residential developments throughout Calgary for a number of years.

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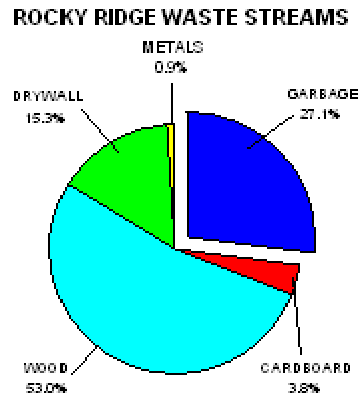
Project Description

MATERIALS HANDLED AND PROJECT COSTS			
Item	Loads	Weight (KG)	Revenue (Expense)
Wood	119	330774	(3307.74)
Cardboard	32	24090	963.60
Metal	8	5962	178.86
Drywall	45	96377	(1252.90)
Garbage	80	170117	(2796.73)
Siding	1	1109	TEST
Hauling			(31350.00)
Vehicle			(16875.86)
Labour			(45200.25)
Fees			70402.00
Totals	285	628,429	(29,239.02)

Allwaste developed a non-profit proposal to serve as a waste manager for the participating builders. The proposal required the cooperation of trades to sort their garbage and scrap at the source by placing it in separate piles in front of the building site. The materials to be separated included wood, mixed metals, wallboard, and corrugated cardboard and garbage. Garages were to be used to protect piles of material during periods of inclement weather. This practice protected materials, especially drywall scraps which must be very clean in order to be recycled, from becoming contaminated with mud. Small wooden bins or plastic drums were provided for garbage to prevent trash from scattering in the wind.

Allwaste dedicated two full time staff to be on-site to operate a regular schedule of collecting the bins from each site. The schedule was planned so that a different material was removed from the building sites each day of the week. During busier times 4 to 5 staff were required. The materials were loaded onto a truck which Allwaste dedicated to the project. Materials were taken to a transfer station constructed jointly by Allwaste and Marquis on the Rocky Ridge site. Marquis selected a site for the transfer station where it could remain undisturbed for as long as possible before the land was required for incorporation into the development. At the transfer site materials were unloaded into larger bins and subsequently hauled to a recycling or disposal site.

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Wood, mostly framing scraps, was taken back to Allwastes' yard in Calgary. In the yard, crews separate wood that can be reused as dimension lumber from scraps that are most suitable for grinding into chips by Allwaste's grinder. Dimension wood is resold to the public or offered to a non-profit organization for the construction of products such as mobile home blocks. The chips are delivered to IKO Industries in Calgary where the chips are processed into pulp and used in the production of roofing materials. Allwaste has also designed a system for producing their own coloured landscape chips for resale.



Corrugated cardboard was delivered and sold to IG Paper in Calgary where it is used in the production of roofing felt. Mixed metals were delivered and sold to scrap metal dealers. Gypsum wall board was delivered to Wearmouth Canada in

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Calgary where the tipping fee is less than the tipping fee at landfill sites. Wearmouth processes the scrap drywall into raw material which is used by BPB Westroc in the production of new wall board.

The program offered a number of advantages to participants. For example, wall board installers usually include a fee for site cleanup in their job quote. This fee could be waved during the Rocky Ridge pilot project since wallboard scraps were collected for recycling by Allwaste staff.

Marquis management has recognized that having a single waste management company led to consistency in handling waste and a commitment to achieving their waste management goals for the development.

A problem common to many residential areas is the use of construction site waste bins by residents in the community. The use of smaller garbage collection bins during the pilot project prevented new residents in the community from placing large items such as furniture or appliances into the builders bins. Thus, the additional disposal costs to builders due to this opportunistic dumping were minimized during the pilot project.

A number of problems surfaced during the project and steps were taken to find solutions. The most important issue for the project was to ensure proper sorting by the trades people filling the bins. Trades crews needed to be continually made aware of the system of sorting scrap materials and taking steps, such as storing materials in garages, to minimize contamination. Since Calgary experienced a residential construction boom during the pilot project, this was especially frustrating. Trades continually moved among different job sites in the city and often changed or hired new staff. This transience made it difficult to maintain an understanding of the recycling project requirements as new people came on to the Marquis site or moved from homes within the site which were not participating in the pilot program. Crews were often in a rush with little time to spend properly sorting or protecting materials from the elements.

Since the Rocky Ridge site is a hilltop location with exposure to westerly winds there were some problems with wind blown litter throughout the site and especially at the transfer station. Marquis and Allwaste staff made an effort to minimize the problem through regular cleanup exercises. However, some complaints were received and the question of whether the transfer and sorting site was operating with an approved land use was raised with municipal

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authorities. This issue was resolved by making a formal application to operate the transfer site.

Recycling Proves Cost Effective

The non-profit collection and recycling service was offered during the pilot project for a fee of \$393.00 per building lot. This number, based upon a prediction of 250 home completions during the year of the pilot project, included \$138.00 for hauling and \$255.00 for collection of materials from lots. It was also understood that the final billing would be adjusted, based upon the number of actual home completions, to cover any additional costs to Allwaste or overpayment by the participants. The fee resulted in a revenue of \$70,402.00 which included a small amount of revenue (\$1,142.46) from the sale of metals and cardboard.



It should be noted that recyclable commodity prices were low through the duration of the pilot project . Expenses at the end of the pilot totalled \$99,641.00 and were \$29,239.02 above the revenue received according to the initial charge. Allwaste absorbed \$11,000.00 of this cost, Marquis paid \$3,600.00 and the remainder was paid by the participating builders. Final cost per house for the non-profit pilot waste collection and recycling service was \$495.00 per house based on 191 home completions. This compares to a typical charge of between

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\$500.00 and \$600.00 per completed home for normal waste removal service which also includes recycling of wood waste.

Building On The Success

The program was reviewed in the fall of 1998 and the participants agreed to continue the program with Marquis requiring that all the builders on the site participate. The collection system is currently being modified to a collection system where a single scrap bin is placed on each participating building site.

The Allwaste crew will take this mixed bin to the depot in the development where materials will be sorted into the separate bins for each material. While this new system will increase the potential for contamination of the larger bins by opportunistic dumping by residents, Allwaste is confident that an education program in the Rocky Ridge development will minimize this problem. The simplicity of the single bin approach will also be easier for trades people.

Based on the pilot project, Allwaste has agreed to continue to offer the service for a fee which is considered acceptable by participants in the program who recognize benefits such as avoiding labour costs of site cleanup. In a competitive construction market, being able to advertise sound environmental construction practices is considered a valuable marketing tool. Participants also appreciate the opportunity to be able to divert large amounts of scrap material from landfill and to contribute to the larger goals of the CRHBA.

In early 1998 the Rocky Ridge recycling project received a Mayor's Environmental Achievement Award from the City of Calgary. The next step for the CRHBA is to encourage reduction in the amount of scrap construction material generated. The Association is currently examining potential waste reduction practices and developing a marketing plan which, in part, uses developers = influence to encourage implementation of the practices by home builders.

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Acknowledgement And Disclaimer

Alberta Environment gratefully acknowledges the cooperation and assistance of the participants in this award winning project and Willow Root Environmental Ltd., author of the document.

This project summary was prepared for Alberta Environment to describe the planning process and operations of a successful waste minimization project in the hope that it will encourage and guide others considering similar projects. The document was based on information provided by the participants, interviews and media reports over the span of the project.

Although this article is not intended as a technical document, every effort has been made to ensure the reliability and accuracy of information while respecting the confidentiality of the participants. Circumstances that affect the viability of projects vary greatly according to location and market factors. Readers are encouraged to carefully study their own situation before applying the ideas presented. Readers aware of similar projects that would be of interest to others are asked to contact the Department.

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