New York State
Environmental Investment Program
Research Project Summary

M.G. McLaren, P.C.

Project Background

Plastic lumber products represent a significant and growing end-use for recycled plastics in the U.S. and elsewhere. Today, however, much of the recycled plastic lumber being sold, such as decking boards, remains non-structural and cannot be used in load-bearing applications. Experts agree however, that the far bigger environmental benefits could be derived if structural components could also be made with recycled plastic lumber. While there are several manufacturers who claim to make structural grade plastic lumber, there are currently no comprehensive guidelines in place to support their claims. As a result, individual specifiers (engineers, architects, contractors) are on their own to determine the properties of each recycled plastic lumber product and how to utilize it. This project represents a multi-year, multi-state effort to improve the confidence of possible plastic lumber users through the institution of ASTM standards for structural grade plastic lumber and to incorporate those standards into a Design Guide.

Project Description

The purpose of this project was to complete a series of experiments and analyses required to support the development of ASTM standards and specifications, and develop a Design Guide for the application and use of structural grade recycled plastic lumber.

Project Results

To date, seven ASTM standard specifications relating to structural grade recycled plastic lumber have been published. An additional two ASTM standards are in the final stages of development and will soon be adopted for public use. These specifications address a broad range of applications of structural grade plastic lumber from decking boards to pilings. They provide both the manufacturer and specifier with information such as standardized testing procedures, minimum performance requirements, and material ordering information.

In addition to the furthering development of the relevant ASTM standards, this project led to the development of the "Structural Grade Plastic Lumber Design Guide". The intention of the design guide is to promote the construction of safe, structural-grade recycled plastic lumber structures in New York State and the nation.

The Design Guide provides the reader with an understanding of the characteristics of various plastic resins used in the production of plastic lumber. It outlines the standard test methods necessary for establishing design properties for a given material. Additionally, the guide provides the methodology and equations necessary for engineers to design with plastic lumber for load-bearing applications.

Both the ASTM standards, and the Structural Grade Plastic Lumber Design Guide will soon be published and available through the ASTM.

Contractor:	M.G. McLaren, P.C.	**NYS EIP Investment:**	$189,000
County:	Rockland County	**Contractor Match:**	$75,999
ESD Region:	Mid Hudson	**Total:**	$264,999
Project Contact:	518/292-5340	**Completion Date:**	September, 2006