A Case Study on the Feasibility for Recycled Polyethylene Plastic Sheathing as a Substitute for Plywood in Below Grade Wood Foundations

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This research will document research in progress on a study initiated 20 years ago to determine if recycled polyethylene plastic sheets coupled with chemically treated decay-resistant lumber or steel stud framing could be substituted for traditional concrete or masonry foundations while simultaneously retaining the structural design criteria of the structure. A foundation eight feet wide by sixteen feet long was constructed using acceptable standard techniques for wood foundations, i.e. treated wood framing, however, recycled plastic for treated plywood sheathing. The foundation was installed seven feet below grade with simulated live and dead loads above. It is hypothesized that the decay resistance of plastic and its availability could make it a viable alternative. The project has been monitored since inception and recently exhumed for performance analysis. The importance stems from the need to identify appropriate and feasible applications for recycled materials, thereby contributing, in part, to reduction of the solid waste disposal problem and a sustainable environment. Reducing the carbon footprint typically associated with concrete foundations would prove to be an added benefit of this potential foundation system.

Key Words: Recycled Materials, Wood Foundations, Solid Waste Reduction, Sustainability