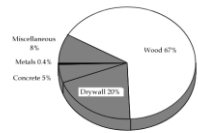


Why Dimensional Lumber?

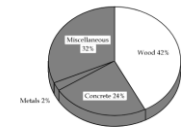
- Dimensional Lumber is standardized lumber often used in framework, flooring, decking, and carpentry.
- Lumber is the highest recovered construction and demolition debris material

Figure 5. Sample composition of residential new construction debris (Average of three sites, Portland, Oregon)



Source: METRC Portland, Oregon

Figure 7. Sample composition of residential demolition debris (Average of three sites, Portland, Oregon)



Source: METRC Portland, Oregon

Source: (1) EPA (1998)

- When recovered from demolition sites, lumber has nail holes and edge damage from previous uses (Janowiak, J.J) which reduces the grade of lumber by one
- The recovered lumber still maintains a large portion of its original strength despite the reduction of grade
- With restrictions and regrading, the recovered lumber can still be reused for structural proposes.
- While regulation on reclaimed dimensional lumber have been proposed, none have been passed yet.

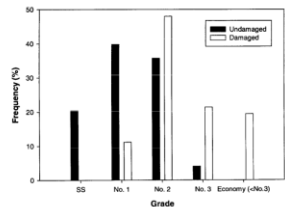


Figure 2. - Grade reduction as a result of damage, 6% by 6's, all forms of damage.

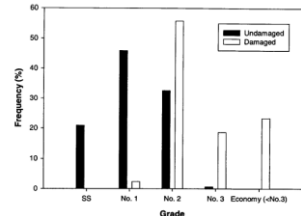


Figure 3. - Grade reduction as a result of damage, 2 by 6's, all forms of damage.

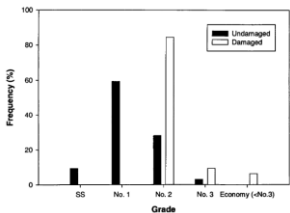


Figure 4. - Grade reduction as a result of damage, 2 by 10's, all forms of damage.

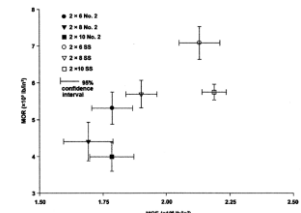


Figure 6. Comparison of average size and grade to MOE and MOI

Source: (2) Effect Of Damage On The Grade Yield Of Recycled Lumber , USDA

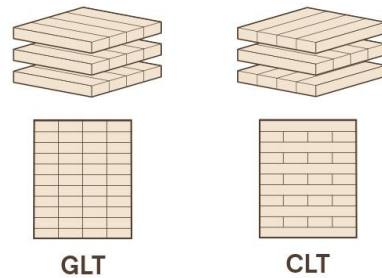
Recycling C&D Debris: Dimensional Lumber

Amir Singh, Jason Lee, and Brandon Kim

Recycling Reclaimed Lumber

Engineered Wood with Reclaimed Lumber:

Use salvaged lumber as feedstock for engineered wood panels such as glue-laminated timber and cross-laminated timber. While there are many barriers with this method, extending the lifespan of the lumber reduces the emissions from manufacturing fresh lumber. (3)



Wooden Bricks: Lightweight wooden bricks are constructed with poplar wood fibers and non-toxic inorganic calcium hydroxide. Because of the novelty of this design, several tests must be done to understand the limitations of this material. (3)

Wood Waste Ash: WWA can be used as the supplementary cementitious materials to produce structural grade concrete. This reduces the reliance on cement in concrete design but, WWA has shown to reduce the workability with increasing amounts. (3)

Composting: Fine particles can be generated from lumber and added to clay loam soil. The resulting soil improve overall plant quality. Some challenges that we face with using composting is contamination within the lumber from its previous use. (3)

Biofuel Use for Low-Grade Lumber:

Lumber that is not suited for structural purposes can used as biofuel This will reduce the reliance on fossil fuels, stabilize fuel costs, and reduce the carbon emissions. (3)

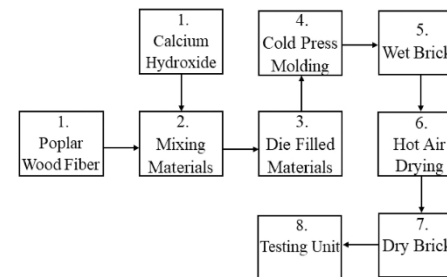


Fig. 6. The process of making lightweight Bricks.

In the New York City Context

- Building types and wood contents: NYC buildings are grouped by historic types so the amount of wood they contain can be estimated using typical joist sizes, spacing, floorplate size, stories, and wall stud dimensions.(4)
- Salvaging released wood: NYC improve wood reuse by identifying buildings by age, identify that potential release usable wood during demolition.(4)
- Reusing salvaged wood: Salvaged wood can be reused in mass-timber construction especially in products like glulam and CLT, and NYC could use this by adopting updated building codes and partnering with engineers and manufacturers to test and develop these materials.(4)

Conclusion

Because of its vast stream of wood waste from C&D and large strength retention, recycling dimensional lumber as potential for significant economic and environmental impacts. Biofuel, feedstock for engineered timber, and composting are some of the potential ways to recycle salvaged lumber. Suggestion on the New York City legislation and regulation on recycling salvaged wood includes tracking salvaged wood, collecting data on potential sources of reusable wood, and investment in CLTs and GLTs.

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