Business Models for Deconstruction and Building Materials Salvage

Sponsored by Yale University

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Why Salvage Building Materials?
Improves the Environment
Saves Embodied Energy
Provides Green Jobs Training
Improves the Standard of Living
How Much Can Be Diverted?

- Average house is 2,000 sq. ft. & weighs 80 tons*

- 250,000 single family residences are demolished each year*

- That represents 20,000,000 tons

- Between concrete recycling and materials reuse we can divert from our landfills about 90 to 95%

- Only 5 to 10% (5 to 8 tons) need to be landfilled

*USEPA statistics
What Materials Can Be Salvaged?

- Appliances
- Bricks
- Cabinets
- Doors
- Flooring
- Hardware
- Heating & Cooling
- Lighting fixtures

- Lumber
- Plumbing fixtures
- Roof tiles
- Sinks
- Trim
- Windows
- Vanities
Appliances
Bricks and Pavers
Cabinets
Doors
Flooring
Heating and Cooling
Lighting
Self-Service Lumber Rack
Plumbing Fixtures
Roof Tile

TRP
Salvaging the built environment™
Windows
Vanities
Solution

Deconstruction and Distribution
Symbiotic Relationship

• With deconstruction only – we would have above ground landfills

• With distribution only – there would be no supply
Existing Models

Deconstruction
- Primarily residential
- Some commercial
- Most are for profit
- Nonprofit – most are formed to fund other activities
- Complete deconstruction
- Soft-strip not considered
- Typically very localized
- Small - 1 to 5 people

Distribution
- Primarily residential
- Very few commercial
- For profit – architectural salvage
- Nonprofit – most are used to fund other activities
- Most offer only higher grade materials
- Most are very localized
- Small – 1 – 5 people and less than $500,000
Business Considerations

• Deconstruction or Resale?
• Commercial or residential?
• For profit or nonprofit?
• Brick and mortar or virtual?
• Variable costs or fix costs?
• What is local business & political climate?
• State of the local economy?
Personal Considerations

• What are your personal goals?
• Do you enjoy detail or are more big picture?
• Do you want a family business?
• What would you like your business mission to be?
• How much money do you have to invest?
• Do you need outside investors?
• How long is your planning horizon?
Summary of Environmental & Economic Benefits

- Saving landfill space
- Retaining embodied energy
- Providing green jobs and green job training
- Improving the standard of living
- Knowing that you are doing the right thing
What do the following mean?

250,000

.001
Benefits to Owner
The Benefits to a Private Owner (residential, commercial/industrial, developer)

- Eligible for tax donations
- Reduces overall project costs
- Reduces disposal costs
- Improves the local standard of living
- Extends the life of local landfills
- Knowing you have done the right thing
## Actual Donation Values

<table>
<thead>
<tr>
<th>City</th>
<th>Sq. Ft.</th>
<th>Donation Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Diego (remodel)</td>
<td>2,100</td>
<td>$ 57,000</td>
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<tr>
<td>Los Angeles</td>
<td>2,800</td>
<td>$ 97,321</td>
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<tr>
<td>Oakland</td>
<td>1,650</td>
<td>$ 63,690</td>
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<tr>
<td>Seattle</td>
<td>1,400</td>
<td>$ 41,000</td>
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<tr>
<td>Boulder</td>
<td>5,800</td>
<td>$232,000</td>
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<tr>
<td>Kansas City</td>
<td>3,000</td>
<td>$121,300</td>
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<td>Chicago</td>
<td>2,100</td>
<td>$102,900</td>
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</table>
Cost-Benefit Analysis

- A 2000 s.f. San Francisco Bay Area home
- 3 Bedrooms & 2 ½ baths
- Raised foundation
- Composite (asphalt) shingles
- Single paned wood windows with divided lights
- Redwood siding
- Carpeting & 5/8” hardwood flooring
- 12 x 20 redwood deck
- The following does not include removal of concrete or asphalt
<table>
<thead>
<tr>
<th></th>
<th>Deconstruction</th>
<th>Demolition</th>
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</thead>
<tbody>
<tr>
<td>Lowering of house</td>
<td>$21,738</td>
<td>$6,000</td>
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<tr>
<td>Disposal</td>
<td>4,100</td>
<td>4,100</td>
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<tr>
<td>Appraisal cost</td>
<td>2,500</td>
<td>0</td>
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<tr>
<td>Total costs</td>
<td>28,338</td>
<td>10,100</td>
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<tr>
<td>Donation value</td>
<td>84,000</td>
<td>0</td>
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<tr>
<td>Cash Value (after tax)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>value of donation at 35%</td>
<td>29,400</td>
<td>0</td>
</tr>
<tr>
<td>Total cost (from above)</td>
<td>28,338</td>
<td>10,100</td>
</tr>
<tr>
<td>After Tax Benefit (Cost)</td>
<td>$1,062</td>
<td>$(10,100)</td>
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</table>
Types of Projects

• Residential deconstruction and salvage
• Commercial deconstruction and salvage
• Specialty deconstruction and salvage
• Green jobs training, consulting & project management
Types of Projects
Residential Deconstruction & Salvage
Commercial Deconstruction & Salvage
Specialty Deconstruction & Salvage
Matrix Freeway Overpass
Specialty Deconstruction & Salvage
Is the overpass a railroad car or a bridge?
Specialty Deconstruction & Salvage
Matrix Freeway Walls
Specialty Deconstruction & Salvage
Matrix Freeway Walls

Walls on a Truck

Walls on a Roof

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Matrix Metrics

95.2% of all materials were diverted from the landfill, representing 10% of the City of Alameda’s annual solid waste

- 31 Tractor-trailer loads of lumber salvaged for reuse
- 1,500 Tons of steel salvaged for reuse
- 1,000 cubic feet of EPS salvaged for reuse
- 7,000 tons of concrete recycled as base rock
Thank You