Stewardship of the Built Environment: G. H. Schettler House Case Study

Historic Preservation Concepts
- Historic Building Conservation
- Neighborhood Revitalization
- Rehabilitation Tax Credits

Sustainability Concepts
- Energy Conservation
- Resource Conservation
- Urban Revitalization
- Reduce/Reuse/Recycle
- Enhance Livability

G. H. Schettler House
ca. 1904

Project Goals
- Reduce Natural Resource Consumption
- Reduce Waste/Increase Recycled Content
- Reduce Hazardous Contamination
- Be Financially Competitive

Physical Assessment
Reduce Natural Resource Consumption

Before Rehabilitation
Heating Load: 135,075 Btuh
Cooling Load: 48,077 Btuh

After Rehabilitation
Heating Load: 85,564 Btuh (36.7% lower)
Cooling Load: 37,275 Btuh (22.5% lower)

Architectural
Brick construction
Large/Tall windows

Architectural
Operating skylight in stairwell

How?
Architectural
Mechanical Thermal Control
Plumbing
Electrical/Lighting

Architectural
Ceiling height
Transoms
Double-hung windows

Architectural
Envelope upgrades
Architectural
Light colored roofing

Light colored walls
“Borrowed Light”

Mechanical Thermal Control
Central forced air furnace
Split system air-conditioning

Two thermal zones with programmable thermostats

Mechanical Thermal Control
Gas-fired fireplace inserts

Attic ventilation fan
Ridge vents

Paddle fan in kitchen
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Electrical/Lighting

Daylighting

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Electrical/Lighting

Tasklighting

Upgraded appliances

Automated controls

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Plumbing

Low flow water fixtures

Low water use appliances

DHW tank insulated

Case 1: Rehabilitate Original House (2541 sf)

Original House
Materials Demolished: 40,630 (12.0%)
Recycled: 298,093 (88.0%)
Total: 338,723 lbs. (~169.4 tons)

Rehabilitated House
New Materials Installed: 48,976 (14.1%)
Recycled: 298,093 (85.9%)
Total: 347,069 lbs. (~173.5 tons)

New Materials Needed:
48,976 lbs. (~24.5 tons)

Construction Waste:  40,630 + 4,898 = 45,528 lbs. (~22.5 tons)
Total Material Stream: 94,504 lbs. (~47.3 tons)

Case 2: New House in the Suburbs (2541 sf)

New Materials Needed: 347,069 lbs. (~173.5 tons)

Construction Waste:  17,787 lbs. (~8.9 tons)
Total Material Stream: 364,856 lbs. (~182.4 tons)

Case 3: Demolish House and Rebuild Comparable New House (2541 sf)

New Materials Needed: 347,069 lbs. (~173.5 tons)

Construction Waste:  338,723 + 17,787 = 356,510 lbs. (~178.3 tons)
Total Material Stream: 703,579 lbs. (~351.8 tons)

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Reduce Hazardous Contamination

Asbestos

Lead

Indoor air quality

Water Quality
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Be Financially Competitive

<table>
<thead>
<tr>
<th>Project Cost:</th>
<th>$215,000</th>
<th>$84.42/sf</th>
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</thead>
<tbody>
<tr>
<td>Tax Credits:</td>
<td>$ 41,800</td>
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<tr>
<td>Net Cost:</td>
<td>$173,200</td>
<td>$67.97/sf</td>
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<tr>
<td>Overall Cost:</td>
<td>$302,700</td>
<td>$119.13/sf</td>
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</tbody>
</table>

North Parlor

Dining Room

Porch

Exterior

Thank You