

**Green Building Project Fact Sheet**  
***Beaulieu Residence***  
(Earth Sheltered/Hydrogen/Solar Electric)

<b>Project</b>	<b>Project Address</b> <b>Owner</b> <b>City</b> <b>Latitude/Elevation</b>	10989 East Tusayan Trail Bryan Beaulieu Scottsdale, Arizona 33° 30' North, 2540 ft above sea level
<b>Team</b>	<b>Architect</b> <b>Builder</b>	R. J. Bacon Company The Construction Zone, Ltd.
<b>General</b>	<b>Floor Area</b> <b>Time Line</b>	4000 ft <sup>2</sup> livable, 2907 ft <sup>2</sup> covered Construction began in September 2003 and expected to be complete by Summer 2005.
<b>Site Use</b>	<b>Minimal Impact</b>  <b>Heat Mitigation</b>  <b>Orientation</b>  <b>Outdoor Living</b>  <b>Landscaping</b> <b>Water Conservation</b>  <b>Pollution Prevention</b>  <b>Air Quality</b>	<ul style="list-style-type: none"> <li>▪ Building designed with minimal impact on site topography.</li> <li>▪ Desert plants and natural features beyond 10' of building footprint and paved areas protected during construction.</li> <li>▪ Driveway and carport is constructed of permeable materials.</li> <li>▪ Non-permeable walkways, uncovered patios, aprons, and driveways cover no more than 40% of the net buildable site area.</li> <li>▪ Home is oriented to the south for active and passive solar strategies.</li> <li>▪ Home is designed with outdoor living in shaded courtyards and protected enclosures.</li> <li>▪ Protected outdoor living area(s) is equal to at least 25% of total conditioned (indoor livable) space.</li> <li>▪ Xeriscape is at least 90% of landscaped areas.</li> <li>▪ Non-sprinkler, zoned irrigation system with separate valving.</li> <li>▪ Irrigation controller with rain sensor shut off.</li> <li>▪ Rainwater collection and storage system for irrigation and cooling of outdoor living areas.</li> <li>▪ No chemical herbicides used on site.</li> <li>▪ No chemical pesticides used on site.</li> <li>▪ Utility supplied power on site at start of construction.</li> </ul>
<b>Structural Elements</b>	<b>Pollution Prevention</b>  <b>Resource Conservation</b>	<ul style="list-style-type: none"> <li>▪ Non-asphalt based damp proofing installed at basement and/or retaining walls.</li> <li>▪ Western coal fly ash concrete with min. 18% substituted volume.</li> <li>▪ Floor structure is at least 75% non-solid sawn lumber unless from certified sustainable source.</li> <li>▪ Roof structure is at least 75% non-solid sawn lumber unless from certified sustainable source.</li> <li>▪ Beams and headers are at least 75% non-solid sawn lumber unless from certified sustainable source.</li> <li>▪ Interior framing is at least 75% non-solid sawn lumber unless from certified sustainable source.</li> <li>▪ Materials from regionally extracted resources.</li> <li>▪ Products from regional manufacturers.</li> </ul>

Building Envelope	Energy Conservation	<ul style="list-style-type: none"> <li>▪ Use of thermal mass design.</li> <li>▪ Radiant barriers.</li> <li>▪ All exterior doors insulated with min. R-2.</li> <li>▪ Windows have NFRC Solar Heat Gain Coefficient [SHGC] of .40 or less.</li> <li>▪ Exterior shading devices/screens with a shading coefficient of 0.45 or lower on windows.</li> <li>▪ Skylights with an NFRC rating of U-0.5 or lower and SHGC of 0.40 or less.</li> <li>▪ South glass has full exterior shading in May, June, and July at noon.</li> <li>▪ Structures and/or landscaping provide summer sun control/shading on min. 50% of east and west wall surfaces.</li> </ul>
Heating, Cooling, and Ventilation	Energy Conservation  Indoor Environmental Quality	<ul style="list-style-type: none"> <li>▪ Evaporative cooling incorporated through site design and outdoor living areas.</li> <li>▪ Computer controlled roof ventilators for airflow intake or exhaust depending on indoor and outdoor monitored conditions.</li> <li>▪ Temperature controlled ceiling fans installed in every room.</li> <li>▪ Stack and cross ventilation enabled through computer controlled operable windows.</li> <li>▪ Passive solar design for winter heating.</li> <li>▪ Ventilation system installed per ASHRAE standards.</li> <li>▪ Passive radon ventilation system installed per EPA guidelines.</li> <li>▪ All fans rated for 1.5 sone or less.</li> </ul>
Electrical Power, Lighting, and Appliances	Energy Conservation	<ul style="list-style-type: none"> <li>▪ Daylighting allows natural light to enter the house from two sides of rooms in at least half of livable floor area.</li> <li>▪ No recessed lights in insulated ceilings.</li> <li>▪ At least 50% of total numbers of fixtures are non-incandescent.</li> <li>▪ Maximum interior lighting wattage does not exceed 0.5 watts/square foot.</li> <li>▪ Smart wiring system for lighting controls.</li> <li>▪ Energy Star rated appliances.</li> <li>▪ Gas dryer stub-out.</li> <li>▪ Solar electric lighting for at least half of site lighting.</li> <li>▪ Photovoltaic (8kW) solar electric power system with adjustable tilt for seasonal solar (altitude) angles.</li> <li>▪ Hydrogen generating fuel cells (8kW) powered by solar electric.</li> </ul>
Plumbing System	Water and Energy Conservation	<ul style="list-style-type: none"> <li>▪ Water heater within 20-pipe feet length of bathroom fixtures.</li> <li>▪ Whole house insulated hot water recirculation system.</li> <li>▪ Southern exposed roof area provided with plumbing for solar hot water system.</li> <li>▪ Dual flush control toilets.</li> <li>▪ Two pipe drain system for graywater recovery system.</li> </ul>
Roofing	Resource Conservation	<ul style="list-style-type: none"> <li>▪ High durability/low maintenance earth sheltered roof system with min. 25% recycled content roof membrane and native desert vegetation.</li> </ul>

<b>Exterior Finishes</b>	<b>Resource Conservation</b>	<ul style="list-style-type: none"> <li>Locally derived materials.</li> <li>Regionally quarried and processed or cultured stone.</li> <li>Materials left in natural state.</li> </ul>
<b>Interior Finishes</b>	<b>Indoor Air Quality</b>	<ul style="list-style-type: none"> <li>Only low toxic, solvent-free adhesives, mastics, and sealants used for at least 75% of the home.</li> <li>Water based finishes on floors.</li> </ul>
<b>Interior Doors,</b>	<b>Resource Conservation</b>	<ul style="list-style-type: none"> <li>No tropical woods used.</li> <li>No wood base, cove, or door/window trim used.</li> </ul>
<b>Finish Floor</b>	<b>Resource Conservation</b> <b>Indoor Air Quality</b>	<ul style="list-style-type: none"> <li>Exposed stained concrete flooring.</li> <li>Rapidly renewable flooring materials.</li> <li>Combined hard flooring is 100% of conditioned floor area.</li> </ul>
<b>Pools and Spas</b>	<b>Energy and Water Conservation</b> <b>Occupant Health</b>	<ul style="list-style-type: none"> <li>Solar assisted pool and spa heating/cooling system.</li> <li>Retractable pool cover.</li> <li>Low-chlorine pool filtration system.</li> <li>Pool has zero water loss backwash system.</li> </ul>
<b>Solid Waste</b>	<b>Resource Conservation</b>	<ul style="list-style-type: none"> <li>Recycling and composting system.</li> </ul>

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