

# Deconstruction: The First Step in “Green” Home Building or Renovation

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## Definition

**Deconstruction** involves the systematic and manual disassembly of the affected sections of a structure, saving as many of the components as possible for reuse or recycling. Deconstruction can be particularly appealing because it enables the owner to earn a **tax deduction** for donating the reusable components to nonprofit organizations, such as Community Forklift or Habitat for Humanity. Deconstruction differs from **demolition** that emphasizes taking down a structure as quickly as possible and having its pieces hauled away to a construction and debris (C&D) landfill and **salvage** that involves a company paying an owner a modest sum to remove as many of the valuable and accessible items as possible prior to demolition.

## The Deconstruction Process

DeConstruction Services, LLC was formed in 2004 as an alternative to traditional salvage and “crunch and dump” demolition that uses heavy equipment (e.g., a front-end loader) to level a house and load it out in trucks in 1-1½ days. Our company’s goal is to keep as much used building material out of landfills as possible and to maximize its reuse or recycling. Both in salvage and demolition operations, the building’s components, including mercury in the thermostat, chloride in vinyl siding, asbestos attached to floor tiles, and arsenic in treated wood decks, are dumped at a commercial landfill from which these toxic chemicals eventually will leach into the groundwater supply. In addition, freon from the central air conditioner will immediately escape into the atmosphere when its connecting lines are cut. Instead, deconstruction captures these toxic chemicals through reuse (vinyl and deck material), recycling (mercury, freon), or proper disposal (asbestos incineration).

The deconstruction work of our company focuses on residential structures. The process entails the manual disassembly of the house in the reverse order from the way it was constructed – last in, first out. First, everything is removed from all interior surfaces (walls, ceilings, floors) including carpets, oak flooring, window and door trim, floor and ceiling molding, fireplace mantel, light switch plates, heat duct covers, light fixtures, ceiling fans, kitchen cabinets, appliances, kitchen countertops, vanities, mirrors, toilets, bathtubs, plumbing fixtures, and shower doors. This is referred to as the “skim” phase.

Next, all interior doors are removed, retaining them in their jambs for convenience when they are reused. Nails are removed from the trim and molding pieces and bundled in similar sized lengths with shrink-wrap and duct tape. Oak flooring is denailed using a specialized “denailing gun” that shoots the nails back out of the board leaving the board undamaged. Our salvage rate for oak flooring is over 90%. The flooring pieces are bundled with shrink-wrap and duct tape into similar sized lengths.

The next step is removal of all drywall or plaster from walls and ceilings. Unfortunately, because of the age of some houses, there is a strong likelihood that these surfaces have lead-based paint on them. Therefore, not even the gypsum drywall can be recycled as a soil amendment for yards, gardens, or landscape plantings to which children and pets might be exposed and must be placed in a debris dumpster. All that remains of the interior at this point is the subflooring and 2’x 4’ studs delineating the rooms.

The next step is to remove the roof (usually asphalt) **shingles** for loading into a separate roll-off container that goes to a company that melts them, uses a magnet to remove the nails, and uses the product as road patch. The sub-roof boards (and eventually the sub-flooring boards, furring strips, etc.) are loaded into a separate roll-off used exclusively for “**clean wood**”, that is, wood that has not been painted, treated, shellacked, or varnished, which is used by a wholesale landscaping company after it is ground up and denailed for wood chips on jogging trails and children’s playgrounds. All **ferrous, aluminum, and copper** metal is separated and recycled, including some of the newer copper-insulated wiring. Rafters and roof trusses are removed, denailed, and stacked ready for transport,

along with ceiling joists, floor joists, and 2x4 wall studs. Plumbing pipes, electrical wiring, and heating and air conditioning ducts are removed as the walls and flooring come out. Even clean insulation also is bagged and saved.

The remaining clean cinder block foundation walls, brick chimney, brick exterior walls (if a brick house), and basement concrete slab can be taken to selected gravel companies and reused in roadbeds. If the structure is a wood frame house, only the chimney, foundation walls, and concrete slab will remain. If a second floor is being added to a one-story house, everything above the 1<sup>st</sup> floor ceiling joists is removed. If the job entails major internal renovation, the only thing remaining may be the sub-flooring and the wooden studs delineating the various rooms – no ceilings or walls remain. The process from start to finish can last from 3-15 days and may sometimes need to occur in two phases to allow the contractor to complete enclosure of the new structure before windows and doors, for example, are removed.

All of the reusable material and appliances are reused by the owner in their newly constructed home, given to friends or neighbors, or donated to nonprofit groups, like Community Forklift or Habitat for Humanity. Our company is neutral on where the material ends up as long as it isn't in a landfill. Our contract is with the owner for the purpose of salvaging and recycling as much reusable product as possible and maximizing the owner's charitable tax deductions. We prepare a final portfolio for the owner containing the contract, record of paid invoices, inventory of donated items for their tax records, signed tax form, and pictures taken throughout the deconstruction process.

### **Benefits and Savings**

The advantages of deconstruction are numerous. For the **property owner**, there is a tax credit earned on the charitable donations of material, reductions in the number of expensive mixed debris roll-offs, the elimination of all costs associated with the transport of the donated material, reductions in the cost for roll-offs containing sorted recyclable material, and good neighbor relations.

The **community** benefits when reusable building materials and appliances are made available at substantially reduced prices for homeowner repairs and remodeling, landlord repair of rental units, and remodeling company work permitted under the building code and authorized by their clients. Money the charitable organizations earn on the sales of reused material goes towards their primary mission, such as purchasing materials for building affordable housing. With half a dozen of our work crew residing in the inner city, this work has become a stable source of employment that helps them meet their family obligations, acquire job readiness skills, and develop experience on a construction site that can lead to future employment in the construction industry.

**Environmentally**, recycling 80% of the structure and its foundation saves space in commercial landfills and various toxic chemicals are prevented from entering our groundwater, the atmosphere, or open land. By reducing society's need to mine the resources needed to manufacture new products to replace those that are salvaged, the energy involved in transporting raw materials to the factory and the product's manufacture, sales, distribution, and installation is saved and the energy entropy cycle slowed, along with reductions in the amount of carbon dioxide and other gases causing global warming.

In summary, deconstruction is a "win-win-win" situation for all involved as well as for our company whose major concern is the environment. It provides us a great deal of satisfaction to know that at the end of the day we are helping to reduce the negative impacts *homo sapiens* are having on our finite planet.