A GUIDE TO DECONSTRUCTION

Habitat for Humanity affiliates engage in deconstruction as a way of helping communities reduce construction waste while gaining inventory for a ReStore operation. This guide will explain the types of deconstruction, important considerations prior to and during the deconstruction process, safety guidelines and tools typically necessary to complete a deconstruction job.

WHAT IS DECONSTRUCTION?

According to Wikipedia, the definition of deconstruction is “the selective dismantlement of building components, specifically for re-use, recycling, and waste management.” However, deconstruction can be generally considered the “demolition and salvage of buildings by carefully removing (by hand) materials for re-use and recycling” (Source: www.senhabitat.org/deconstruction).

Deconstruction is also a great alternative to options such as landfills.

Deconstruction Facts¹:

- US EPA has estimated that U.S. companies generate 136 million tons of building-related construction and demolition (C&D) waste per year.

- 92% of building-related C&D waste is from renovation and demolition.

- C&D waste is approximately 30% of all solid waste produced in this country excluding road and bridge debris.

- US EPA has estimated that only 20-30% of C&D waste is presently recycled.

- About 245,000 residential structures and 44,000 commercial structures are demolished each year in the US.

- Many older buildings contain asbestos and lead-based paint both hazardous to human health in renovation and demolition processes.

- Landfills and incinerators are increasingly more expensive and problematic to open, operate and close.
TYPES OF DECONSTRUCTION

Structural

Structural deconstruction involves dismantling and then re-using and recycling the structural components of a building, such as brick, stone, and lumber.

Non-structural

Non-structural deconstruction is also known as “soft-stripping”, involves re-using and recycling the non-structural components of a building, such as appliances, cabinets, doors, and windows.
PRE-DECONSTRUCTION

Project Safety Plan

For each new project, the designated Site Supervisor/Safety Manager is responsible for creating a plan to maintain safety at the jobsite, and the overall prevention of workplace injuries and illnesses. Information to be included in the plan includes, but is not limited to: worker orientation, safety training, CPR/First Aid training, hazard identification and training, tool use guidelines, respiratory protection, fall protection, emergency procedures, OSHA forms, job-site daily log, Personal Protective Equipment (PPE) use, and procedures for correcting unsafe behavior. The Site Supervisor/Safety Manager must ensure that safety is not sacrificed for any reason and be held accountable for all safety and health issues within their control.

Survey

This step of the process involves visually surveying the building, both inside and out, to estimate the basic material types and the overall condition of the structure. It is particularly important to note conditions such as fire damage, water damage, rot, obvious leaks, holes, roots and uneven ground, biting animals, insect nests, tree limbs in the way, overhead wires, fences, and possible biological hazards such as bird or rat droppings, asbestos, and lead. How the building will be taken apart, the movement of people and materials, and the use of tools and equipment all create potential hazards during the deconstruction. Additionally, draft a building materials estimate based upon an inventory of the building material types and quantities, which includes number of items and measurements of the building.

Liability Waivers

A new sample Release and Waiver of Liability (Waiver) template is now available on the Habitat Affiliate website (www.hfhaffiliateinsurance.com). Remember that all legal documents, including this Waiver, should be reviewed by the affiliate’s attorney prior to use. It’s imperative that every volunteer sign a Waiver prior to volunteering for any activity, including deconstruction. The Waiver must also be signed by every volunteer at least annually. A signed Waiver serves as a defense if there is a claim, and outdated or poorly written waivers can hurt that defense.
**Tax Considerations**

- **Do keep careful records of all materials removed and sold at the ReStore.** This will not only help confirm what was removed, but can also serve as inventory documentation should there be a fire or other property loss at the ReStore.

- **Don’t provide any written estimates of value.** IRS regulations prohibit charitable organizations such as Habitat for Humanity from establishing or affirming the value of contributions. Therefore, the property owner is responsible for determining the value of the donated materials.

- **If the value of a donation exceeds $5,000,** the property owner is required to hire a 3rd party appraiser, whose signature will also be required on the corresponding IRS form.

- **Recommend to the property owner that they take photos of materials prior to removal,** especially of high-value items, as additional documentation to support a determination of value by the property owner.

- **Always tell property owners to talk to their tax professional if an issue or question arises.** Never give tax advice.

**Other Considerations**

- **Are appliances being donated?** If so, it is necessary to disconnect them from power and water sources, in addition to ensuring that they are not recalled items which cannot be accepted.

- **Are you getting the entire set of a particular item?** The full value of a set is typically based upon the presence of all items from the set. An entire set should also have more appeal to ReStore customers.

- **Is the flooring being refinished?** If so, care must be exercised when taking apart and stacking the flooring.

- **Utilities shut-offs.** Don’t trust the word of the property owner that utilities have been shut off. Make sure workers know the location of and can get to the water shut-off and breaker box.

- **On-call Plumber and Electrician.** Make sure you have number for a plumber and electrician handy in case the utilities need to be shut off or an expert is needed to remove an item.
• **Are any pets or children present in the home or building?** From a safety perspective, deconstruction sites can be dangerous, especially for pets and children. In addition, the presence of pets creates a potential bite/scratch hazard for the deconstruction workers.

• **Will you have adequate access to the driveway?** This makes it easier for the Habitat for Humanity truck to get in and out of the deconstruction site.

### SAFETY GUIDELINES

Safety is a result of communicating how to do things in a safe and responsible manner. It’s reasonable to expect minor cuts, scrapes, bruises, etc., but it is not reasonable to expect falls, electrical shocks, major cuts, or impact injuries. Everyone, including the Site Supervisor/Safety Manager, on a deconstruction site needs to stay aware of what and where people are in relation to the building, ground, materials, equipment, and each other.

**Workers**

All workers, whether volunteers or employees, should be aware of the following general rules:

• No worker should undertake a job that appears to be unsafe.

• No worker is expected to undertake a job until he/she has received adequate safety instructions, and is authorized to perform the task.

• No worker should use chemicals without fully understanding their toxic properties and without the knowledge required to work with these chemicals safely.

• Mechanical safeguards must be kept in place.

• Workers must report any unsafe conditions to the Site Supervisor/Safety Manager.

• Personal protective equipment must be used when and where required by the Site Supervisor/Safety Manager. All such equipment must be properly maintained. Note, HFHI recommends that affiliates implement OSHA’s new fall protection standards/ruling as of June 16, 2011. Full detail of this ruling can be found at: [http://osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=4755](http://osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=4755).

• Report all accidents, no matter how slight, to the Site Supervisor/Safety Manager immediately.
**Building**

Ensure the building has been abated of asbestos, and all accessible biological hazards have been removed. As of April 22, 2010, contractors performing renovation, repair and painting projects that disturb lead-based paint in homes, child care facilities, and schools built before 1978, must be certified and follow specific work practices to prevent lead contamination. Deconstruction activities can create dust that contains lead. By following lead-safe work practices, lead hazards can be prevented. Additional information can be found at: [http://www.epa.gov/lead/pubs/renovation.htm](http://www.epa.gov/lead/pubs/renovation.htm).

The building elements should be physically sound, able to support the weight of workers, and not present a danger of collapse wherever workers might be present. Any shoring or stabilizing should be completed prior to the deconstruction and as needed during the deconstruction process. Workers should not, for example, remove load-bearing walls when they are still supporting a floor or roof above.

**Environment**

Work should not take place in wet conditions, such as ice, rain, or snow. This could cause slips/falls and electrical shocks. Extremely hot and or humid conditions and lack of ventilation are sources of heat exhaustion and stroke. Extra care should be taken to ensure the following:

- adequate water consumption
- as much shade as possible
- not overtaxing workers to the point that they could make mistakes.

During extremely cold conditions, a warm break area should be provided.

**Nail punctures and tripping hazards**

A common cause of nail punctures and tripping is when salvaged wood pieces with nails still in them are piled up or placed in areas where people are walking. Always remove nails from wood at the earliest opportunity. Stack materials to be denailed away from where people are working or walking. Also, clean up salvage and debris as you work.
BASIC TOOLS AND INFORMATION

A complete tool inventory should be done prior to deconstruction. Purchase any additional tools that might be needed.

Safety

- Fire extinguisher
- First-aid kit
- Job contact telephone numbers and job site cell phone
- Location of the nearest medical emergency treatment center and telephone numbers for emergency services, including police
- Personal protective equipment (PPE)- each worker has hard hat, safety glasses, ear plugs for excessive noise, steel-toed boots, long pants, filter masks or 1/2 mask respirators (fit-tested) as needed, gloves made of sturdy material, tool-belt and basic personal tools (preferred)
- Roof anchors w/16 d nails, tie straps, safety harnesses, lanyards, life-lines, rope grabs, carabiners

Organization and Security

- Warning signs - Hard Hat area, Construction Site, etc
- Yellow caution tape
- Garbage bags (heavy duty contractors)
- Garbage can for miscellaneous solid waste
- Generator, grounding rod, and GFCI plug
- Water container for drinking water
- Water: for hand washing
- Disposable cups and paper towels
- Hand soap (construction grade)
- Hudson sprayers and germicidal bleach
- Polyethylene plastic sheet
- Rope
- Sawhorses
- Storage for equipment, either on-site or removal each day (if required to remove, then optimally a lockable vehicle).
- Tarps
- Electric current detector
- Electrical cords
Deconstruction Tools – Power and Manual

- Axe (small and large), Pick axe
- Cats paw
- Chain saw
- Crow bars short and long (prefer “Gorilla Bar” type crow bar)
- De-nailing gun and air compressor (optional)
- Drill, cordless with batteries, and battery charger
- Hammers
- Ladders: 6 and 8 foot, 20’ extension ladders (fiberglass preferred)
- Measuring tape
- Nails and screws
- Pliers
- Saws: bow saw, hand saw, hack saw rotary saw, Skil saw with grinder and wood cutting blades
- Sawz-alls with bi-metal blades
- Screw drivers regular and phillips head
- Shovels: regular and specialty Snow shovels Roofing shovels
- Sledgehammers (small and large)
- Post-hole digger
- Pry bars
- Rakes
- Tamping bar or “Grizzly Bar”
- Tin snips
- Vise grips
- Wheelbarrows
- Wire and bolt cutters
- Wrenches adjustable

Equipment Rental as needed

- 20 C.Y. to 40 C.Y. roll-off container
- Covered truck to remove salvage
- Debris chutes
- Man-lift, Hi-lift, Fork Lift
- Pneumatic or electric hammer with chisels
- Rolling scaffold
- Fall protection safety equipment
- Respiratory protection safety suits and equipment
This Guide is not intended to be a comprehensive source of all deconstruction information. Please contact your affiliate Executive Director and/or affiliate legal counsel regarding questions or issues that may arise.

Sources