

Designing and Implementing a Deconstruction Ordinance

By Ted Reiff

A thorough analysis of the benefits of a deconstruction ordinance for municipalities seeking to resolve ever-increasing solid waste with diminishing landfill space. Introduces local elected officials, solid waste managers, architects, construction engineers and contractors to an easily managed process for the handling of building-demolition waste.



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Numerous cities have passed deconstruction ordinances. Many more are considering them. Such ordinances take varying approaches. Some require only surveys—predictions of which materials can be salvaged and the potential benefits to owners—hoping that owners and contractors will recognize the value of salvaging building materials for donation and resale, or for reuse in the new building. Other ordinances mandate the deconstruction of all buildings slated for removal. Clearly, the more stringent approach delivers the best outcome for landfill diversion and zero waste.

Benefits

The advantages of deconstruction (as an alternative to demolition) differ somewhat from city to city, county to county and state to state. However, these five benefits are common to all areas:

Waste. The composition of the municipal solid waste stream (MSW) has been studied for years by governments and various non-governmental agencies (NGOs). These studies show that construction and demolition debris (C&D) represents between 25 and 50 percent of MSW. Further, over the past 30 years, according to the EPA, the construction portion of C&D has shrunk to 10 percent or less, while the remainder comes from demolition.

In most, but not all, U.S. and Canadian locations, diverting concrete from the waste stream has helped to reduce the impact of demolition waste on landfills. Nevertheless, the long economic expansion experienced since 2008 has continued to push C&D to higher and higher volumes.

Environment. Besides reducing the strain on landfills, deconstruction mitigates several environmental contaminants. The two most noticeable are noise and hazardous waste. Noises are layered, meaning that one noise may mask another, but does so by adding to the total decibels. For example, the noise from a diesel fueled excavator may mask the noise of demolishing a building, but the stress on neighbors and the damage to eardrums comes from both, along with other noise irritants.

Asbestos and lead paint are even more compromising. While all buildings must be tested for asbestos, sometimes testing identifies the presence of asbestos, and abatement is accomplished, only to discover more asbestos during deconstruction.

This occurred during a San Mateo County deconstruction training. The class was halted in the contaminated portion of the building pending full abatement. If this house had been demolished, the remaining asbestos would have remained undiscovered. With no follow-up abatement, this hazardous material would have ended up in the air or soil. Similarly, the handling of lead painted surfaces is covered in both EPA and OSHA regulations, but only deconstruction can properly separate and safely handle materials with lead-based paint.

Energy. In 2010, Forest Products Laboratory, a division of the U.S. Department of Agriculture, conducted a nationwide study comparing the energy consumed by using virgin lumber versus salvaged lumber from structural framing and flooring. The results were startling even to those of us who participated in the study. Using virgin lumber consumed 11 to 13 times more energy than did salvaged lumber.

Now consider other building materials such as appliances, doors and windows. These products contain extractive minerals. The embodied energy in these essential materials – aluminum, copper and steel – is many times greater than that of lumber.¹

Employment. By definition, deconstruction is a labor-intensive process, requiring from four to seven times more workers per job than demolition.

A deconstruction crew with three to eight members, including a skilled leader and a mix of semi-skilled workers, can easily disassemble and salvage the reusable components of a 2,000 square-foot house in 12 to 15 days. In addition to the deconstruction crew, the project would employ an excavator operator, a truck driver and one laborer to remove the foundation and hardscape.

Mechanical demolition of the same house would typically employ a machine operator to wreck the building, a truck driver to haul the debris, and a laborer doing hand work and dust control over a two-to-three day period.

Deconstruction jobs are often classified as entry-level positions, ideal for individuals who want to advance to well-paying positions in other trades. In the past three decades, hundreds, if not thousands, of untrained workers have started as modestly paid deconstruction workers, moved up through the ranks and graduated to higher skilled and salaried jobs in construction.

¹The embodied energy of lumber is 1,075 Btu/lb; that of recycled aluminum is 3,483, or over 13 million Btu, if virgin.

Additional employment extends beyond the jobsite. Workers are needed to unload, sort, store, sell and distribute the salvaged materials. Even the smallest retail salvage business employs three people. And one additional person is needed for every \$150,000 over \$400,000 in annual sales, not including employees in administration and accounting.

Community. Retail organizations selling salvaged materials at thrift-store prices positively impact budget minded families. The more a family can save on home maintenance or improvement, the more income is available for daily necessities, education and savings, thereby benefiting the entire community. As one property is improved, others typically follow.

Components of the Deconstruction Ordinance

Following are summaries of the steps, participants and challenges associated with deconstruction and, ultimately, reuse.

Reuse Survey. To determine which parts of a structure may be reused, a thorough review or survey of the project must be completed. It should include a written report on the types and quantities of materials to be salvaged, along with photographs if the materials are to be appraised for tax-deduction purposes. This step should not be assigned to the building owner, deconstruction contractor, construction manager or appraiser, because these parties are neither independent of the transaction nor primarily responsible for distribution of the materials within the reuse market. Since reuse markets, like other markets, vary by locale, an ideal choice would be a knowledgeable employee of a local major reseller/distributor, or a municipal employee trained by such a specialist. The survey also needs to include the quantity and weight of lumber, other bulk materials (e.g., bricks and pavers) and fixtures.

Deconstruction will not automatically keep reusable materials out of landfills or reuse/recycling centers. The ultimate goal of this type of ordinance is not deconstruction itself, but reuse. Unless individuals and organizations are available to receive, use, sell or distribute all salvaged materials, the ordinance will fail. Consequently, understanding deconstruction, and what deconstruction can and cannot accomplish, is critical to formulating an ordinance.

Deconstruction has several variants. Some buildings are completely deconstructed. Others undergo limited change, such as a kitchen remodel or complete window replacement. Still other buildings are completely remodeled, with all the interior and exterior walls, ceilings and floors stripped of their finished coverings, leaving only the wood frame. Each of these variants yields reusable materials of different types, quantities and weights. Most municipalities charge lower permit fees for

(and more quickly approve) remodeling projects. Perhaps for that reason, since the collapse of the housing market in 2007-08, substantially more permits have been issued for remodeling than for full deconstruction and rebuilding. Materials from remodels are just as bulky and often weigh more than the lumber obtained from full deconstruction. In fact, per cubic yard, lumber typically weighs less than any other single category of salvaged materials.

Contractors. Four types of contractors are likely candidates for deconstruction work: demolition contractors, general building contractors, remodeling contractors and abatement contractors.

Demolition Contractors are in the business of making buildings disappear. How they accomplish that poses several potential problems. First, they have sizeable investments in heavy equipment and need to keep that equipment working to cover costs. Second, a typical residential demolition company has small crews: a very capable machine operator, truck driver to haul the debris and one laborer to assist the others and hose down the dust. Third, they are not organized to run the five-person crews of semi-skilled workers required for deconstruction. Consequently, these contractors prefer to demolish. Furthermore, when attempting to salvage for reuse, they more often than not fail to meet minimum salvage-for-reuse standards.

General Building Contractors know how to put buildings together, and they do it carefully, so it follows that they should know how to take them apart. However, their crews are usually comprised of skilled tradespeople earning from \$30 to \$80 per hour, rates that do not justify having them remove doors, sinks and cabinets, or de-nail lumber and would substantially increase the already higher cost of deconstruction.

Remodeling Contractors are, at first blush, a very viable choice, since they remove old materials in a careful manner and replace them with new. However, most are not interested in removing framing (rafters and joists), which seriously limits their breadth in deconstruction. Also, like the general contractor, they pay their crews substantially more than is justified by the task.

Abatement Contractors have multiple crews of various sizes and for the most part are engaged in jobs that use hand tools. Further, they employ semi-skilled workers with a pay scale similar to deconstruction workers. However, they are not trained in the meticulous task of removing building components for reuse. Rather, they are trained to remove hazardous materials as rapidly as possible with no thought of material preservation. However, abatement crews are often used in commercial deconstruction, so their use in residential deconstruction is a real possibility.

Many contractors can easily remove a door, window, rafter, joist or stud. The critical step—one that is less well known—is how to handle the material following removal. Allowing a window to be damaged during transport is a waste of both the product and the time and money expended to extract and transport it. Specific procedures are needed to maintain the integrity of salvaged materials. For example, windows are removed intact, with the sash securely attached to the frame and locked. They are transported standing upright, as installed, and strapped to the side of a dry van. Exposed nails and screws must be removed from cabinetry, which is shrink-wrapped to keep doors and drawers from flying open during transit. Lumber and wood materials are denailed, separated by dimension and length, stacked, unitized and strapped with steel bands. Items such as appliances, palletized bricks, and cabinets are shrink-wrapped for protection (see appendix A for a sample of specifications).

Contractor Training. Deconstruction workers and their supervisors/managers must be trained in the principles and skills of building-materials salvage, whether they are experienced construction workers or newcomers. Some deconstruction training may be accomplished in the classroom, but the real proof of salvage competency is the consistent delivery of damage-free, ready-to-reuse materials.

Throughout the country, one can find deconstruction contractors who purport to deconstruct a standard size house in just three days. They do this by either 1) salvaging only the fixtures, rafters and ceiling joists, while destroying the rest of the framing, or 2) salvaging only a few fixtures and cutting the building walls into panels, which they rely on the retailer or laydown yard to dismantle, de-nail and sort, a process that causes more waste than standard deconstruction.

Preparing or adopting written specifications or guidelines on how to handle, protect and ship reusable materials would ensure high levels of salvage and reuse and give all deconstruction contractors comparable competitive standing.

Distribution. While deconstruction is one of many vital tools on the path to reuse, without places to unload, store, sell or distribute the salvaged building materials, deconstruction merely produces an above-ground landfill.

There are different ways to distribute salvaged materials:

- Job-site sales. Selling materials directly from a jobsite certainly reduces the cost of transportation and retail space. However, for liability reasons, owners may not agree to have strangers on their property. And what happens to those materials that are not sold?

- On-line broker or exchange systems. These certainly provide a wider market (even international), albeit at a relatively low charge. Shipping can be expensive and, like direct selling from the jobsite, the question of what to do with unsold materials when deconstruction is completed is unaddressed.
- Brick and mortar stores. While these can be expensive to manage and operate, they answer the question of what to do with materials that remain unsold after deconstruction is completed. Further, physical stores can use online sales to reach broader markets and increase inventory turnover.

A central facility must be established from which to distribute materials for reuse.

This is absolutely necessary for three reasons:

1. If the building owner donates to a qualified nonprofit organization, it is the responsibility of that organization to prove, by way of an inventory, that the materials in the survey were delivered in reusable condition and accounted for on its books. This is particularly important because the owner may be audited.
2. If the donated materials are going to another (technically unqualified) nonprofit, or directly to a for-profit organization or individual, the materials must be reviewed, accepted and inventoried by the original donee.
3. Regardless of recipient, the materials must be immediately removed from the jobsite in order to make room for construction.

Ideally, central facilities are retail sites where shoppers can browse and make purchases, either in person or online. Consequently, they need to be located in or near communities where budget-minded families seek high-grade materials for cents on the dollar to improve their homes and neighborhoods.

Three types of stores sell used building materials:

- high-end architectural salvage stores
- mid-market stores selling only new, or almost new, materials
- stores selling utilitarian materials, such as nominal dimension framing lumber, vinyl windows, hollow-core doors, common appliances, sinks and lighting

Stores serving an economy-minded market must carry the full spectrum of quality materials, including single-glazed wood windows, which are often purchased to replace broken windows of the same type. While some of these materials may not pass building codes, a single replacement doesn't require a permit, and often the buyer lacks the funds to replace all the windows with code-approved models.

When high-end materials are delivered to an architectural salvage store, or sold onsite or through an online exchange, it robs the utilitarian store of materials that, by generating a higher margin, offset lower generating materials of lesser quality. Reuse

businesses need to focus on distributing the most materials, not just the most valuable ones. This is analogous to a grocer severely discounting often-purchased produce like bananas to draw in shoppers who will then also purchase higher margin meats.

The objectives of reducing waste and increasing reuse must be measurable. Yet many reclaimed materials are sold directly from the jobsite or through online sales platforms. Neither contractors nor building owners weigh the materials sold in these ways, so the data by which the success of an ordinance could be measured is lost.

As the largest purveyors of deconstructed and salvaged materials, reuse retailers are key players in the industry. While some of the largest in the business are nonprofit, many are for-profit. However, for-profit retailers tend to be narrowly focused, offering specific materials, such as old lumber and architecturally significant items like claw-foot bathtubs, stained-glass windows and antique appliances. In contrast, nonprofit retailers typically accept and sell the full range of used building materials. Delivering to at least one nonprofit retailer will help guarantee significant waste reduction.

Lumber is difficult to handle and requires considerable space in a retail facility. While some resellers accept lumber with nails, most do not. Expense and labor are also required to operate de-nailing stations, a process that must be done indoors during inclement weather. Space is costly, and while higher costs limit facility size, smaller size limits the quantity of accepted materials.

Having onsite de-nailing, and unitizing by species and dimension, make lumber easier to load, transport and unload. Once unloaded, the lumber requires less space, since several units may be stacked together. Contractors may complain that such requirements increase labor costs and, consequently, bid prices. However, if the distributor must bear the costs, retail prices for the materials will increase. Costs are costs regardless of where incurred, and the building owner is generally better able to handle them than is the buyer of salvaged materials. This is especially true if the owner is receiving a tax benefit.

As more building owners select the deconstruction alternative, and as municipalities become more aggressive with ordinances requiring deconstruction, distributors are being pressured to increase their physical size and the scope of their marketing budgets. At the same time, land values in dynamic, growing cities are putting pressure on resellers to downsize their footprints and limit the quantity of materials accepted to items of higher value. On the West Coast, particularly in San Diego, Los Angeles and the San Francisco Bay Area, this is already a concern that needs to be addressed by policymakers. Building materials retail stores in all three of these cities have closed in the last couple of years due to increased rents.

Verification. To determine which materials and their quantity are reusable, a reliable organization must survey the project and meet with the architect, building contractor and/or owner to determine the scope and cost of deconstruction.

Upon completion of the project, the inventories and their quantities must be adjusted up or down, since additional materials may be discovered (a hidden wall safe) or a surveyed item broken (a cracked toilet). The final inventory may then be compared with the reuse survey, ensuring that all parties (deconstruction contractor, waste hauler, recycler and distributor) have complied with the ordinance.

Frequently overlooked is that donated materials must be ready for immediate reuse. There is no room for repairs; the most that can be done is a quick cleaning, for example in the case of plumbing fixtures or appliances. Repairs require trained professionals and a huge inventory of parts, as well as hand and power tools that require specialized skill sets. Consider the cost of returned items that do not function properly.

Regardless of where and how materials wind up being reused, an inventory-tracking system must verify that the materials listed for reuse in the survey actually have been salvaged. The system must answer the following questions:

- Who is tracking materials being reused in the owner's new project?
- Which materials were sold or given away from the jobsite, and who managed that activity?
- Which materials were delivered elsewhere, and who signed off on the bills of lading?

In addition to line-item inventories, weight tags obtained from each of the recipients, including reuse stores, onsite sales, recyclers and disposal stations, must balance with the estimated total project weight.

On the surface, these final steps may appear onerous and overly detailed. However, most municipalities and practitioners know of contractors who, because of cost or time overruns on a project, have sent materials to the landfill that were scheduled for reuse. Or contractors who have diverted waste to unapproved transfer stations or landfills in order to keep the project's waste numbers low. Or resellers (both nonprofit and for profit) who have discarded materials that were received for reuse. Or appraisers who have signed appraisals verifying IRS tax deductions, knowing that fewer materials were donated than originally planned.

Several organizations around the country purport to accept a wide range of reusable materials, but upon scrutiny have been found to refuse many common materials, or

to accept them on an inconsistent basis. This creates a problem for the deconstruction contractor who delivers materials to such an organization one week and has similar materials refused the following week because the facility is “full.” Worse still are nonprofit organizations that sign off on all materials received and immediately send those they do not want to landfills. Recipient certification of some type could resolve many of these difficulties.

Evaluating Outcomes. Measurement is required to determine whether an ordinance is accomplishing its objectives (landfill diversion and reuse). Weight is by far the easiest and most accurate way to measure the success of an ordinance. The reason is simple: all landfill operations and costs of disposal are based on weight. For example, assume the goal is to reduce total C&D waste by 10 percent—a very realistic goal. If recycling accounts for four percent, then the balance, or six percent, must come from reuse. Unfortunately, many municipalities do not distinguish between total MSW and C&D, a situation that demands more in-depth research.

Architects, structural engineers, specifiers and building associations publish estimates of average weights of materials and finished products. For example, Douglas Fir, the common framing lumber in much of the U.S., weighs 2.3 pounds per board foot, and many online calculators will compute the number of board feet required to build a house of specific square footage. The trick is to determine how much of that can be salvaged for reuse. Thirty percent is a relatively comfortable estimate, since much of that material may be less than six feet long, damaged by weather or during deconstruction, or harbor insect infestation. Samples of several similarly sized deconstructed homes will provide that information.

Once a baseline has been determined, all that is needed is to measure each load of materials coming from a deconstruction site. These loads include disposal, recycling and, of course, reuse. Reuse must always be measured by weight. While it would be ideal for the reuse facility to have a truck scale, local public truck scales are always available for a minor fee. Inexpensive, small commercial scales can be used for “drop-offs,” miscellaneous used materials donated to the reuse facility.

Appraisers. Thirty years ago, at the birth of deconstruction as a defined method of salvaging reusable building materials, a process for donating reclaimed materials was generally unknown. However, donation soon became a catalyst for encouraging deconstruction, thanks to tax incentives available to private, tax-paying building owners. Most owners who could afford to demolish a very livable house (or usable commercial building) in order to build one more suited to their lifestyle were in an income tax bracket that could benefit from commensurate tax deductions.

Unfortunately, it was, and still is, difficult to find appraisers who are qualified to evaluate used building materials. In keeping with current federal and state legislation, the entire appraisal business is broken into three categories: real estate, personal property and business valuations. An appraiser qualified in one is not necessarily qualified in another. A house sitting on a foundation and firmly attached to the ground is considered, along with the underlying ground, to be real estate. However, once the parts have been disconnected from the building and, consequently, from the dirt, they are considered personal property. This includes an entire house that has been severed from utilities and its foundation.

Created by Congress, the Appraisal Foundation was chartered to create appraisal standards for both real property, personal property and business. To that end, the foundation developed the Uniform Standards of Professional Appraisal Practices (USPAP).

“USPAP was adopted by Congress in 1989, and contains standards for all types of appraisal services, including real estate, personal property, business and mass appraisal. ... USPAP is updated every two years so that appraisers have the information they need to deliver unbiased and thoughtful opinions of value.” (appraisalfoundation.org)

Unlike real property appraisers, personal property appraisers are not licensed by any government, so qualifying them is especially important. The Appraisal Foundation suggests selecting an appraiser from one of its six sponsors: American Society of Appraisers, American Society of Farm Managers and Rural Appraisers, Appraisers Association of America, International Association of Assessing Officers, International Society of Appraisers and the Royal Institution of Chartered Surveyors.

Donors claiming tax-deductible donations of greater than \$5,000.00 are required to obtain a “qualified appraisal” from a “qualified appraiser.” However, qualified appraisers, as defined by the Internal Revenue Service, are not required to be members of any of the associations listed above.

Since they have no license to revoke, errant appraisers can only be disciplined by revoking their membership in any sponsoring organization (a liability issue for the organization), or fines, or censure by the Internal Revenue Service through the audit process. Unfortunately, the IRS does not publish lists of those in violation of IRS regulations.

Lack of competition and the relatively small size of the salvaged building-materials industry have enabled building-materials appraisers to charge higher rates than are charged by more common and competitive real-estate appraisers. In addition, appraisal fees, in addition to the value of the materials, may be tax-deductible,

depending on the donor's situation.

These factors have led unscrupulous and unqualified appraisers to seek lucrative building-materials appraisal jobs by promising donors unreasonably high valuations and unduly reduced taxes for their donations.

Since appraised donations are often made based on reputation, or referral from a trusted source, audits that go against the donor and the appraiser's valuation can be devastating to the long-term health of charities whose missions and very existence depend upon such donations.

Nonprofits are in the best position to qualify appraisers for two reasons. First, the IRS has taken the position that nonprofits may refuse any donation if they believe that the appraised value is too high, or that the appraiser is not qualified. Second, the IRS may hold nonprofits accountable for knowingly accepting donations that are overvalued, or even simply assessed, by an unqualified appraiser.

Unqualified appraisers and the over-valuation of donated materials have been the subjects of review by the Internal Revenue Service and federal tax courts. Attorneys general in several states have considered imposing sanctions on charities that accept overvalued donations.

If nonprofits did the work of qualifying appraisers, municipalities would not have to be concerned with that question. However, guidelines would have to be written and, as a condition of certification, nonprofits would need to be required to vet appraisers whose clients wish to make tax-deductible donations.

Summary

A deconstruction ordinance can generate significant benefits for the environment, employment, community, homeowners and enterprising contractors, provided it is knowledgeably designed and wisely executed. Thorough planning needn't take excessive amounts of time or resources but does require staying focused on the objectives: landfill diversion and reuse.

The most important factors in getting reusable building materials from their deconstruction source to the end user are logistical. To ensure an owner or contractor's full compliance with the deconstruction ordinance:

- Salvage surveys must be taken prior to deconstruction.
- The operation must be conducted by qualified deconstruction contractors who know how to extract and, more importantly, properly handle and deliver salvaged materials.

- Salvaged materials must be delivered to qualified recipients who cooperate with other available recipients to ensure that all materials are placed.
- Inventories, bills of lading and weight receipts must be required.
- Responsibility for vetting appraisers must be shouldered by knowledgeable individuals employed, preferably, by qualified nonprofits.

Deconstruction is doable when done right.

Steps to Create and Implement a Deconstruction Ordinance

1. Poll the city's governing body to ensure the political viability of efforts to design, write and adopt such an ordinance for both residential and commercial structures.
2. With approval, create a policy statement with assistance from key individuals within city government and outsiders, such as architects, sustainable builders, deconstruction practitioners and consultants.
3. Encourage the city to provide a city-owned warehouse at reduced market rent until the distribution operator achieves financial sustainability, or 5 years, whichever comes first. This facility should be comprised of an enclosed warehouse of at least 10,000 square feet, an external lumber yard of 6,000 square feet with ample room for customer parking and, ideally, additional space for future enlargement. Preferably, the facility operator will be a 501(c)3 organization, since the ability to award tax-deductible donation receipts has proven to be a consistent benefit.
 - Have the operator train and designate specific contractors who may then be referred to potential deconstruction customers. Additional nontrained contractors should be encouraged to deliver materials as well, provided they adhere to specifications.
 - Require the operator to accept reusable materials directly from all homeowners.
 - Allow the operator to vet appraisers and select only those who are IRS qualified.
4. Ensure that relevant departments (building, zoning, environmental, public works) are prepared to mandate deconstruction, have the necessary tools to provide building owners and contractors with crucial information and prepare staff to review the weight data from projects and report underperformers.
5. Create the proper forms for reporting and measuring success.
6. Publish an RFP and encourage potential operators to respond.
7. After passing the ordinance, allow one year for implementation, during which those applying for demolition permits are required to obtain a deconstruction survey. While deconstruction will not be required during this period, surveys will demonstrate the benefits of deconstruction anticipated following enactment

of the ordinance.

8. Assist the operator with a grand opening through paper and electronic media.

Ted Reiff is president and founder of The ReUse People, an internationally known nonprofit organization whose mission is *to reduce the solid waste stream and change the way the built environment is renewed by salvaging building materials and distributing them for reuse*. The ReUse People works with and assists landfill and transfer-station operators, federal agencies and local governments with strategies for reducing waste streams. It does so by promoting the reuse of salvaged building materials, training contractors, developing specifications for building-material salvage, and fostering local diversion efforts, including the development of ordinances.

The ReUse Institute, the consulting and training division of The ReUse People, offers both commercial and residential contractor-training programs, as well as workshops for architects, designers, contractors and others on all aspects of building deconstruction, from concept to full or partial removal of fixed and non-fixed assets for reuse.



Appendix A

Deconstruction Specifications

January 1, 2024

(These Specifications may be changed by TRP at any time without notice)

TRP is responsible for preparing a fixture inventory and lumber inventory of salvaged materials, as needed, for the completion of the appraisal and/or donation process.

Contractors work with TRP personnel to arrange for the fixture inventory to be completed at least a week prior to the start of deconstruction. The lumber inventory is taken after deconstruction is completed and the materials sorted and unitized, before being shipped offsite.

No materials may be shipped from a jobsite prior to the completion of a full inventory.

Please note: TRP may refuse entire loads and send them back to the jobsite if the materials are not prepared as specified below.

Following is a reasonably complete list of the materials found on a typical deconstruction project. However, even if these materials are present on the site, only those items bearing a TRP inventory label listing the date and number of the item, are salvaged.

Salvaged Materials

- **Accessories.** Place all brackets from soap dishes, towel bars, toilet paper holders, etc., in zip lock bags and tape them to the accessory.
- **Appliances.** Completely shrink wrap all appliances. Secure all parts (knobs, grates, burner tops, etc.) with shrink wrap and place them inside the appliance.
- **Bricks and Pavers.** Check with your TRP representative prior to the start of any job containing bricks and pavers, as they may not be salvageable. Clean and stack bricks on pallets. Generally, a pallet will hold 500 bricks. Use shrink wrap to keep the bricks tightly packed and secured to the pallet.
- **Cabinets.** After cabinets are detached, replace all doors and/or drawers and remove all exposed nails and screws. Shrink wrap all cabinets.

Ship all cabinets in the same load.

If possible, remove all sink or vanity cabinets with their tops, sinks and faucets attached. Separate these items from the cabinet only when they are too heavy or the countertop tile is chipped or broken.

- **Carpets.** Measure before rolling. Roll the top side inward with the backing on the outside. Secure the rolls with duct tape and write the size in feet and inches (e.g. 12' 5") with a marker on the outside of the roll, along with the room in which the carpet was located (e.g. living room).

Save the carpet padding for protecting fragile items or those that may be easily scratched, such as cabinets, during shipping. Also, retain the carpet padding for future deconstruction projects that may not have padding.

Clean carpet squares/tiles of debris and stains, then shrink wrap and palletize. Check with your local TRP representative for more specific instructions.

- **Doors.** Remove doors with jambs attached, and the jamb fastened with a screw to the edge of the door between the bottom and the doorknob. In some regions hollow-core flush doors may not be salvaged.

All doors must be shipped in the same load.

- **Flooring - wood.** Top nailed hardwood flooring is generally not salvaged, however always check with your local TRP representative. Salvage all finished t&g flooring (hard or softwood) one inch in thickness or greater. Denail all wood flooring and unitize it in bundles of short, medium and long lengths that can easily be handled by one person. Use sufficient 4-inch shrink wrap in two or three locations to hold the bundles together for handling and transportation.
- **Granite Countertops.** Do not break granite countertops. Use a grinder with a diamond blade and cut the top into pieces that can easily be handled by two people. Leave countertops attached to the top of cabinets whenever possible.
- **Hardware.** Place all hardware in cardboard boxes. Do not use cabinet drawers to store and ship hardware items.
- **HVAC Equipment.** Residential furnaces and air conditioners need special handling. Use proper appliance dollies to move them. Ensure that all parts are attached. AC units must be pumped down and all refrigeration gasses removed before disconnecting the lines – that's the law.

Commercial HVAC equipment will generally be removed by others.

- **Lighting Fixtures.** Most electrical fixtures have small screws, caps and brackets that are integral to the fixture. If these parts cannot be reinstalled after removal, place them in sealed plastic bags and tape the bags securely to the fixtures. All lighting fixtures must be transported in secure cardboard boxes.
- **Lumber.** All lumber six feet and longer must be denailed, unitized and banded with $\frac{3}{4}$ inch steel banding. Lumber less than six feet will be made into bolsters, recycled, discarded or reused. Check with your local TRP representative. Note: bolsters four feet in length must be used to separate units of lumber when loading.

All units of lumber shall be 48 inches wide, unless they are 2x10s, in which case the units will be 50 inches with 5 boards wide. Units shall be no higher than 36 inches.

Use two evenly spaced bands on units up to 12 feet in length. Use three bands on longer lengths. All banding material must be of ¾-inch steel, fastened with steel fasteners.

Unitize all lumber of the same dimension together. Do not mix lumber of varying dimensions except as provided below. No single unit should vary by more than two feet from the shortest to the longest piece. Place the longest pieces on the bottom of the unit and the shortest pieces on the top, with all pieces flush with one another at one end of the unit.

Do not mix different species together in the same unit. For example, redwood and Douglas fir must be in separate units; pressure-treated lumber must be separate from non pressure-treated.

At the completion of a job, various pieces of odd-sized lumber may remain that did not fit in previously banded units. It is okay to mix this lumber together in a single unit as long as the unit does not exceed 48x36 inches.

Stack lumber with sets of at least two bolsters, allowing room for the fork of a forklift to lift the units. The bolsters must be at least three inches thick.

TRP will arrange to have truckers onsite to remove large beams and glulams from buildings and immediately place them on trucks.

- **Moldings and Trim.** Check with your TRP representative regarding the salvage or disposal of door and window trim and other moldings. There is no need to match trim with specific windows or doors, however, do separate various types of trim (casings, baseboard, chair rail, crown molding) from one another. Denail, and shrink wrap these materials, then bundle them for one person to carry.
- **Plumbing Fixtures.** Sinks, toilets and bathtubs must be clean and free of debris before loading. Keep toilet tanks attached to their bowls.
- **Roofing Tile.** Place roofing tile on pallets that have been constructed with wood sides and steel bands to hold and protect the tile. Stand the tile on edge with the long dimension in a vertical position. When the entire pallet is fully packed with tile, cover with plywood or other durable material so that a second row of tile can be stacked on top. Note: The wood sides must reach above the height of the second row of tile so that pallets can be stacked atop one another. Use steel banding around the sides of the pallet to strengthen the unit.
- **Windows.** Remove windows with the frames and sashes intact and the windows latched. Store and ship in an upright position.

All windows must be shipped in the same load.

Other

- **Trucking.** In the absence of prior arrangements, contractors are expected to deliver all materials to TRP, or a location designated by TRP.

When a delivery is destined for a location other than TRP, the contractor will be given the delivery address prior to submitting a bid to the owner.

Trucks must provide net weight tags to TRP personnel upon delivery of materials.

- **Protection of Materials.** Fixtures must be safeguarded after they are disconnected from the building, prior to shipping.

If rain is occurring or forecast when fixtures are being moved off the jobsite, they must be transported in a box vehicle or van.

Place materials on trucks in a manner that precludes damage during shipping. Stand doors and windows in a vertical position and secure them against the side of the vehicle. Enclose small or fragile items, such as hardware and lighting fixtures, in boxes.

- **Damaged Materials.** While contractors are responsible for removing items without damaging them, occasional damage is unavoidable. Do not discard damaged items. Store them in a single location on the jobsite for possible salvage and inventory correction by a TRP representative.
- **Removal of Materials from Jobsite.** Never sell, dispose of, or otherwise remove materials from the jobsite, except in the normal course of delivery.

Appendix B

Qualified Appraisal

IRS Publication 561 (02/2024) *Determining the Value of Property*, defines a qualified appraisal as one which:

- Is made, signed, and dated by a qualified appraiser (defined later) in accordance with the substance and principles of the Uniform Standards of Professional Appraisal Practice.
- Meets the relevant requirements of Regulations section 1.170A-17(a) and (b).
- Is signed by the qualified appraiser and dated no earlier than 60 days before the date of the contribution and no later than the due date, including extensions, of the return on which the deduction for the contribution is first claimed. For an appraisal report dated before the date of the contribution, the valuation effective date must be no earlier than 60 days before the date of the contribution and no later than the date of the contribution. For an appraisal report dated on or after the date of the contribution, the valuation effective date must be the date of the contribution.
- Does not involve a prohibited appraisal fee.

You must receive the qualified appraisal before the due date, including extensions, of the return on which a charitable contribution deduction is first claimed for the donated property. If the deduction is first claimed on an amended return, the qualified appraisal must be received before the date on which the amended return is filed. An appraisal is not a qualified appraisal if you fail to disclose or you misrepresent facts to your appraiser and a reasonable person would expect this failure or misrepresentation to cause the appraiser to misstate the value of the property you contributed.

Form 8283 must be completed and attached to your tax return. Generally, you do not need to attach the qualified appraisal itself, but you should keep a copy as long as it may be relevant under the tax law. There are four exceptions.

- If you claim a deduction of \$20,000 or more for donations of art, you should attach a complete copy of the appraisal. See [Art and Collectibles](#), earlier.
- If you claim a deduction of more than \$500,000 for a donation of property, you must attach the appraisal. See [Deductions of More Than \\$500,000](#), earlier.
- If you claim a deduction of more than \$500 for an article of clothing, or a household item, that is not in good used condition or better, you must attach the appraisal. See [Deduction over \\$500 for certain clothing or household items](#), earlier.
- If you claim a deduction for an easement or other restriction on the exterior of a building in a historic district, you must attach the appraisal. See [Certified historic structures](#), earlier.

Qualified Appraiser

This same publication defines a qualified appraiser as an individual with verifiable education and experience in valuing the type of property for which the appraisal is performed (underlined by the author) (see Appendix B for both appraisal and appraiser qualifications)

1. The individual:
 - a. Has earned an appraisal designation from a generally recognized professional appraiser organization, for the type of property being valued; or
 - b. Has met certain minimum education requirements and 2 or more years of experience in valuing the type of property being valued. To meet the minimum education requirement, the individual must have successfully completed professional or college-level coursework obtained from:
 - i. A professional or college-level educational organization,
 - ii. A professional trade or appraiser organization that regularly offers educational programs in valuing the type of property, or
 - iii. An employer as part of an employee apprenticeship or education program similar to professional or college-level courses.

2. The individual regularly prepares appraisals for which they are paid.
3. The individual is not an [excluded individual](#) (defined later).

In addition, the appraiser must make a declaration in the appraisal that, because of their background, experience, education, and membership in professional associations, they are qualified to make appraisals of the type of property being valued. The appraiser must complete the Declaration of Appraiser section on Form 8283, Section B. More than one appraiser may appraise the property, provided that each complies with the requirements, including signing the qualified appraisal and the Declaration of Appraiser section on Form 8283, Section B.

Excluded individuals.

The following individuals cannot be qualified appraisers for the donated property.

1. The donor of the property or the taxpayer who claims the deduction.
2. The donee of the property.
3. A party to the transaction in which the donor acquired the property being appraised, unless the property is donated within 2 months of the date of acquisition and its appraised value is not more than its acquisition price. This applies to the person who sold, exchanged, or gave the property to the donor, or any person who acted as an agent for the transferor or donor in the transaction.
4. Any person employed by any of the above persons. For example, if the donor acquired a painting from an art dealer, neither the dealer nor persons employed by the dealer can be qualified appraisers for that painting.
5. Any person related under section 267(b) of the Internal Revenue Code to any of the above persons or married to a person related under section 267(b) to any of the above persons.
6. An appraiser who appraises regularly for a person in (1), (2), or (3), and who does not perform a majority of their appraisals made during their tax year for other persons.
7. An individual who receives a prohibited appraisal fee for the appraisal of the donated property. See [Prohibited appraisal fee](#), earlier.
8. An individual who is prohibited from practicing before the IRS under section 330(c) of title 31 of the United States Code at any time during the 3-year period ending on the date the appraisal is signed by the individual.