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Deconstructing and salvaging the past to build a more sustainable future

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The City of Palo Alto has been working to achieve the highest possible landfill diversion rate for construction and demolition (C&D) debris. To accelerate the diversion, the City initiated a deconstruction pilot program three years ago that aims to increase the number of applicants for new home building permits who choose to deconstruct existing homes rather than demolish them. The deconstruction pilot program is proving increasingly popular and is paying dividends, not only to homeowners and homebuilders, but also to the nonprofit businesses that accept and resell the salvaged materials — and to the City’s diversion program.

The pilot C&D program was initiated as a way to increase the City’s diversion rate for non-inert construction and demolition debris generated by single-family residential demolitions (including detached garages and accessory structures), remodelings, and new construction.

With its high-quality schools and proximity to high-paying jobs, Palo Alto has always been an extremely desirable place to live. Now, like many other cities in the Bay Area, Palo Alto is almost entirely built out. Those factors have combined to inflate home and land values. Just the underlying residential land is selling for well above \$400/sq. ft. in some neighborhoods. One result is that Palo Alto is seeing more and more buyers deciding to build new homes rather than remodeling or adding to existing homes.

The City’s Development Services Department processes and issues building and demolition permits. A property owner or applicant must obtain a separate demolition permit for each detached structure over 120 sq. ft. Usual and past practice for a whole house demolition or a detached garage demolition has been for the City to require review and approval of plans for the

replacement structure before the demolition permit can be issued. This requirement was put in place to protect against the potential for blight to occur between the time the buildings are demolished and the approval of plans for the replacement structures.

Under the pilot program, applicants typically apply for a demolition permit when they apply for a building permit for a new home, and the two permits are processed concurrently. It may take one to three months or more to review and approve a building permit for a new single family home (including architects’ turnaround time for revisions, resubmittal, and internal staff review). However, the demolition permit may be ready to issue in as few as 10–14 days. Thus, under the pilot deconstruction program, this time difference can be used to remove the existing home and prepare the site for the new building.



The original first floor framing of this deconstructed house remains in place on a new foundation, January 2014. Recycled lumber on the left is from a different house. Photo: Naphtali H. Knox, FAICP.

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A standard demolition of a single-family home may take only a few days from start to finish, including removing the foundation and grading the site so that it is properly prepared for construction. The process to deconstruct a single-family home takes longer, generally seven to 10 days, depending on the size of the home and the construction type. Before the pilot program, the added time that it took to deconstruct a home as opposed to a standard teardown acted as a barrier to wider adoption. Under the pilot program, the longer removal (via deconstruction) is not an impediment. The program allows early issuance of the demolition permit so that deconstruction can be initiated while the permit for the replacement structure is still under review.

Beyond the early start offered through deconstruction and the environmental benefits of salvaging and reusing building materials, the tax value of donating used building material can be substantial. Deconstruction may actually be cheaper than demolition when tax deductions are calculated. Depending on the financial situation of the property owner, the tax savings may be large enough to pay for the costs of deconstruction. <http://bit.ly/1mjXzDE>

Example of how a project proceeds through the City's deconstruction pilot program

An applicant submits plans and applies for a building permit for a new single-family home. At the same time, the applicant also applies for a permit to demolish the existing single family home. Concurrently, the applicant submits a copy of their signed deconstruction contract specifying a whole house deconstruction (as opposed to partial or selective deconstruction).

As soon as all the standard conditions are met — utility disconnects, street tree protection fencing, issuance of Bay Area Air Quality Management District clearance (J number), etc. — and usually as soon as 10–14 days from the date of application, the demolition permit can be issued and deconstruction of the existing home can begin. Please see the links to the time-lapse videos at the end of this article.

Typical deconstruction process

The property owner selects a deconstruction contractor and signs a deconstruction contract. An appraiser is selected and hired to complete a pre-inventory of the potential materials to be salvaged and donated. With the



Bricks, wrought iron gate, and a four-year-old water heater are among items to be salvaged during deconstruction. Screen capture from *The Wall Street Journal* video, "Deconstruction is a growing trend in the West Coast housing market," Dec. 20, 2012. <http://on.wsj.com/YrGgX1>



Salvaged lumber stored for resale at The Reuse People, Oakland warehouse, 9235 San Leandro Street. Photo: Scott McKay, AICP.

demolition permit in hand, the deconstruction commences, and all feasible materials are salvaged and palletized for donation and reuse. Salvageable materials usually include lumber, plywood, flooring, appliances, cabinets, plumbing and electrical fixtures, architectural details, roof tiles, pavers, doors, windows, and in some cases, even plants, trees, and other vegetation.

Salvageable materials can vary widely based on the age of the home and type of construction. In many cases, homes built before WWII used old growth redwood or other old growth woods that are either no longer available or prohibitively expensive. This wood is highly coveted by some builders as well as artisans, and can be sold for

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Salvaged windows stored for resale at The Reuse People, Oakland warehouse, 9235 San Leandro Street. Photo: Scott McKay, AICP.



Bollards received for storage and resale at The Reuse People, Oakland warehouse, 9235 San Leandro Street. Photo: Scott McKay, AICP.

a premium. Once the deconstruction is complete, the materials are trucked to the nonprofit salvage facility. The appraiser completes a final appraisal of the materials that were salvaged (and completes applicable tax paperwork) in collaboration and agreement with the nonprofit salvage facility. The salvage facility then sells the materials for reuse.

The upfront cost of deconstructing a home is typically more than twice as expensive as a standard demolition. Compared to a standard demolition, deconstructing a house is significantly more labor intensive, requiring the careful disassembly of the house including removing nails from lumber and cutting to size. Standard demolition usually involves heavy machinery and only a few workers to demolish the home and load the mixed C&D debris in a truck or bin for hauling to a materials recovery facility. However, as noted above, depending on the tax situation of the property owner, the deconstruction may actually end up costing less than the standard demolition after tax savings are factored in.

On the horizon

Palo Alto's deconstruction pilot program continues to grow in popularity as more and more homeowners become aware of the potential time and money savings. Currently over half of all single-family homes that are demolished each year in

Palo Alto are deconstructed. Given the success of the pilot program, the City is working toward incorporating deconstruction as a standard part of the development review process. As older homes give way to new construction, the City is working towards a future where existing homes that are being replaced are deconstructed rather than demolished. Other municipalities looking to divert construction and demolition debris from landfills should be able to create similar programs and expect similar results.

For other information related to deconstruction, follow these links:

Time Lapse video, 1:02. 172 Park Avenue, Palo Alto, Oct. 2013.

<http://bit.ly/1baWcTs>

Time Lapse video, 3:34. Palo Alto, Oct. 18, 2013

<http://vimeo.com/79464829>

"The Demolition Discount," by Pui-Wing Tam, *The Wall Street Journal*, December 21, 2012. <http://on.wsj.com/15GPL7q>

"Deconstruction is a growing trend in the West Coast housing market." WSJ's Monika Vosough reports. Video, 4:25. Dec. 20, 2012.

<http://on.wsj.com/YrGgX1>



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