

NAS Alameda Deconstruction

Prepared for EPA Region 9
by Materials for the Future Foundation, Inc.

(accessed at <http://www.smartgrowth.org/casestudies/NASAlameda.html>)

Background

In the fall of 1995, several local non-profit organizations with expertise in deconstruction formed a team to explore the possibility of using deconstruction at the Naval Air Station (NAS) Alameda. At that time, NAS Alameda had been slated for closure in April 1997 and was in the process of preparing the base for transfer to civilian use. Preliminary meetings with base officials revealed that the NAS Alameda base command (the local commanding office) was willing to work with civilian organizations to identify opportunities for deconstruction during the closure process.

The non-profit organizations that came together to work on the project were the Materials for the Future Foundation (MFF), the East Bay Conversion and Reinvestment Commission (EBCRC), the Center for Economic Conversion and the National Economic Development and Law Center (NEDLC). Initial funding for the project was obtained by EBCRC from the Office of Economic Adjustment (OEA).

Deconstruction is the careful dismantling of structures in order to maximize the recovery of building components and materials. Deconstruction differs from recycling in that materials are recovered for reuse or remanufacturing. The value of the recovered materials offsets the cost of the increased labor necessary to dismantle the structure.

A number of benefits are associated with deconstruction, including the reduction of landfilled demolition debris, conservation of resources through reuse, and a reduction of greenhouse gases through forest preservation. Deconstruction also has many economic development benefits. It is a good opportunity for small businesses or job development programs. Deconstruction can also help add value to the local economy when reclaimed materials are used in local value-added remanufacturing enterprises. In addition, deconstruction is valuable as a training site for work-readiness and basic construction skills, since it exposes trainees to many of the tools and skills used in the building trades.

The purpose of the NAS Alameda project was to assess the feasibility of using deconstruction at the base and to identify the best strategies for intervention in the base closure timeline to encourage deconstruction. Base closure entails three phases: during the first, the military still occupies and operates the base; during the second phase, military operations have ceased, responsibility is passed to the facilities engineering command and base properties are available for interim leasing but ownership of the base still rests with the US Government; in the ultimate phase the base is transferred to local civilian ownership.

The project, initiated while the base was still in operation, spanned two years. During the course of the deconstruction project, operations ceased and responsibility for the base passed to the facilities engineering command. Initially, the project team hoped to develop strategies for financing and managing deconstruction, test these strategies with a pilot and implement the strategies more widely at NAS Alameda.

Progress with the pilot, however, was slower than expected. In December 1997, although the pilot had not yet been completed, the project team authored a report entitled, *Building Deconstruction on Closing Military Bases*. That report described the lessons learned to date and is available from the EBCRC.

By December 1997, most of the initial funding had been expended. MFF assumed the lead role in moving the project forward, funded by the Environmental Protection Agency, Region 9. MFF staff and the other non-profit partners continued to work with base closure and reuse officials to advocate for the project and broker the necessary agreements. This case study describes the subsequent completion of the deconstruction pilot.

Related Studies

Early in the planning of project, the EBCRC hired a Navy Liaison consultant to identify potential Navy funding sources and contract award considerations related to the deconstruction of specific buildings. The consultant produced a report addressing these issues and providing information on Navy base closure programs and requirements, building selection for a fast-track pilot approach and a discussion of Navy risk assessment factors. This report is included as Appendix A in the *Building Deconstruction on Closing Military Bases Report*.

In order to assess the technical factors affecting the feasibility and best approach to deconstruction at NAS Alameda, EBCRC also sponsored a Study for Building Deconstruction. This study, funded by the City of Alameda Waste Management and Recycling Department, helped to inform the larger deconstruction demonstration project. The technical team selected to perform the building study was The Onyx Group, a planning and design firm; Beyond Waste, a deconstruction company; and Versar, Inc., an environmental consulting firm.

The report from this study includes a building survey for deconstruction, a recommendation of buildings for the pilot deconstruction, a sample Request for Proposals (RFP) package for deconstruction and deconstruction and demolition cost estimates for those buildings identified as deconstruction candidates. This report is available from the EBCRC and portions of the report are included as Appendices B and C of the *Building Deconstruction on Closing Military Bases Report*.

The NAS Alameda Pilot

The overall purpose of the pilot deconstruction was to demonstrate the feasibility of deconstruction and to gain practical experience in financing, contracting and implementing a deconstruction project at NAS Alameda. In addition, the team proposed contracting with a local non-profit homeless job training enterprise for the deconstruction in order to demonstrate the benefits of deconstruction as a job training opportunity.

Prior to the deconstruction project, the NAS Alameda Facilities Management Office and the Alameda Reuse and Redevelopment Authority (ARRA) had generated a list of approximately 100 buildings and various other structures on the base that were determined to lack reuse value. The ARRA, which is the local entity responsible for developing the base reuse plan, assumed that these buildings would eventually be demolished. These buildings, identified by the base command as "level 6/7" buildings, became the initial pool of candidates considered for deconstruction.

In early 1996, the project team began meeting regularly with the NAS Alameda base command and the ARRA to develop the pilot and to discuss an overall strategy for deconstruction at NAS Alameda. Although the base command and the ARRA both expressed interest in using deconstruction as an innovative approach to removing some of the level 6/7 buildings, no military or reuse authority funding was budgeted for demolition or deconstruction. The base command and the ARRA initially hoped that deconstruction could be contracted at no cost, based on the value of the materials contained in the buildings.

Military Funding Possibilities

In order to proceed with the pilot, it was necessary for the project team to identify funding for the deconstruction. During early meetings with the base command, the team explored the use of lay-away funds for deconstruction. This Department of Defense funding is used to prepare facilities for a period of disuse during the transition to civilian ownership. This preparation is limited to activities necessary to maintain the integrity of the structure to avoid the creation of a nuisance or a hazard. Lay-away typically includes shutting off utilities, minor repairs and boarding up doors and windows. Buildings that will eventually be removed must also be laid away for the interim period before demolition.

The project team initially hoped that a small number of the buildings slated for demolition could be selected for the pilot and that the funds allocated for their lay-away could instead be redirected to pay for deconstruction, thus more effectively utilizing scarce federal resources. However, the amount of funding budgeted for lay-away activities for buildings without reuse value was found to be negligible in nearly all cases. The project team instead proposed identifying a small group of buildings with a relatively high combined salvage value and relatively larger lay-away budgets. It was hoped that packaging the group together into one deconstruction contract would achieve sufficient economy of scale to make the pilot feasible.

Unfortunately, work was proceeding on lay away activities by the time the project began. Although the Facilities Management Office was very responsive, providing the project with lay-away plans for candidate buildings and regular updates on the scheduling of lay-away activities, once lay-away work was completed on a building, those funds were expended and could not be redirected to deconstruction. Identifying a cost-effective group of buildings out of a constantly diminishing pool of candidates proved impossible. After some months, the project concluded that this strategy would not be effective at NAS Alameda.

Working with the Local Reuse Authority

Throughout the course of the project, the team also met regularly with the ARRA to ensure that the project remained informed of changes in interim use plans. One unexpected development was the identification of tenants for buildings on the list of buildings initially thought to lack reuse value. As the project proceeded, the ARRA requested that a number of buildings be removed from the list of deconstruction candidates. It was found that due to the exceptionally strong real estate market in the San Francisco Bay Area, even buildings initially considered too marginal for interim use could be leased at a discount. Since a portion of the ARRA's operating budget is derived from interim lease revenue, removal of buildings with even slight leasing potential would be counter productive.

The screening process eventually yielded a group of seven small buildings suitable for a pilot. These buildings were recommended for a deconstruction pilot by the technical team and were thought to have no leasing potential. The total footprint of the buildings was approximately 12,000 square feet and the estimated cost of deconstruction was \$24,244.

The project team submitted a proposal for funding for the pilot to the ARRA, which agreed to fund the pilot deconstruction out of the interim lease revenue budget as a demonstration project. While available for the pilot, these funds could not be considered a source of support for on-going deconstruction.

Licensing Deconstruction

It was also necessary to develop a mechanism to allow the ARRA to contract for the removal of the buildings. Although operations had ceased at NAS Alameda, the Department of Defense still had jurisdiction over the base. The Department of the Navy and the ARRA had executed a large parcel lease, which allowed the ARRA to sublease and make improvements to properties. It was originally hoped that a relatively informal agreement between the ARRA and the Navy's local real estate representative, Engineering Field Activity (EFA) West, would be sufficient to allow the pilot project to move forward.

Upon review, however, EFA West found that the large parcel lease did not allow demolition or removal of structures. Both the City of Alameda Attorney's office and EFA West agreed that a sublicense agreement would be necessary to proceed with the pilot. The sublicense agreement would allow the ARRA to lease the property where the buildings to be demolished were located.

However, the sublicense agreement required a Navy policy decision, which could not be made at the local level. EFA West was required to request permission from Naval Facilities Engineering Command (NAVFAC) to proceed with the sublicense agreement and deconstruction. After approximately four weeks, EFA West informed the project team that NAVFAC had approved the sublicense agreement for the deconstruction pilot. Having obtained the NAVFAC policy decision, EFA West would also be able to approve future deconstruction at the local level.

After several more weeks of deliberation, EFA West ultimately determined that an Addendum to the large parcel lease was the appropriate mechanism to allow the ARRA to contract for deconstruction. The Addendum allows the removal of the buildings to be accomplished as an improvement to the property under the terms of the master lease. This document was finally executed March 24, 1997.

Environmental and Historical Review

While the project awaited the preparation of these documents by EFA West, environmental review and permitting requirements were identified. An environmental review by the City Planning Department determined that the project was eligible for a categorical exemption from the relevant California environmental regulations, based on the small size and accessory nature of the buildings. This exemption is equivalent to a negative declaration, indicating that the project will have no negative environmental impact. Although larger structures would not be eligible for a categorical exemption, it would be unusual for a planning department to object to deconstruction on environmental grounds. The Planning Department also determined that the buildings were not of historical, archaeological or architectural significance.

It was also necessary for the Navy to perform similar reviews for National Environmental Protection Act (NEPA) clearance and to verify the buildings' historical status. The Navy also found that the project posed no environmental or historical concerns. These review processes might have caused a delay, had the project not already been held up by the need to develop an appropriate contracting mechanism.

By the time the project reached this stage, over two years had elapsed. During this time, potential tenants for five of the seven original pilot buildings approached the ARRA. The pilot was ultimately reduced to two buildings with a combined area of approximately 2,400 square feet. The cost to the ARRA to deconstruct these buildings was to \$9,609.

Employment Training Component

The non-profit contractor selected to perform the work was Building Opportunities for Self-Sufficiency (BOSS) Enterprises, Inc., a property improvement services company. This enterprise provides employment for formerly homeless clients of BOSS' social services programs. The ARRA used a straightforward purchase order to contract with BOSS for the deconstruction. The ARRA agreed to waive the requirement of a performance bond and to assure contract compliance by withholding payment until all work was satisfactorily completed.

Prior to the commencement of deconstruction, BOSS Enterprises performed air sampling to quantify the lead exposure levels that would be experienced by the deconstruction crew. The BOSS crew supervisor performed a typical eight-hour day of deconstruction while wearing protective clothing, a respirator and a personal air monitor. Work practices identical to the methods the crew would use during regular workdays were employed and an environmental technician was present on-site during testing to ensure the accuracy of the sampling.

An accredited industrial hygiene laboratory analyzed the sample and found the level of exposure to be far below the action level. During the eight-hour test period, lead exposure levels measured between 5 and 6 micrograms. The action level for lead is 30 micrograms.

A number of practices were used to minimize the creation of hazardous lead dust during both the sampling period and the actual deconstruction. These practices included avoiding the use of power cutting tools on leaded surfaces, avoiding excessive hammering and scraping on leaded surfaces and the exclusive use of pry bars and mallets to take leaded lumber apart. In addition, all members of the deconstruction crew received an eight-hour lead hazard training prior to beginning work to ensure that all crew members understood the hazard posed by lead and were informed of the workplace practices necessary to reduce this hazard.

The BOSS crew began deconstruction work on August 21, 1998. The crew consisted of one supervisor, a journey-level lead support, an assistant and two laborers. The laborers are participants in BOSS' employment training program. The assistant is a former participant hired permanently by BOSS Enterprises. The BOSS crew disassembled the buildings, de-nailed the lumber, sorted debris and stacked the recovered materials. BOSS removed the buildings to grade, leaving the foundations in place. Deconstruction took a total of 279 hours to complete, approximately eight crew days.

The project reclaimed 2,186 board feet of lumber (Douglas fir and redwood) and approximately 500 pounds of galvanized corrugated siding from Building 275. Approximately 900 pounds of debris could not be salvaged from this building and was taken to the local transfer station. Building 416, an engineered metal frame building with galvanized siding and roof sheathing, was disassembled and sold for reuse. Approximately 200 pounds of rotted tongue and groove Douglas fir decking could not be salvaged from this building and was also taken to the local transfer station.

BOSS Enterprises entered into an agreement with a local contractor to remove all materials from the site, including dumping the debris that could not be recycled or reused, in exchange for the right to the reusable materials salvaged by the project. This relationship was successful because of the particular needs and skills of the contractor and his commitment to seeing the project completed with maximum reuse.

The contractor owns a small recycled woodworking business and he retained a portion of the salvaged wood for his own commercial use. The value of this material to the contractor equaled the savings he realized by not having to purchase the material through a broker or a retailer. This value is greater than the revenue he would have received had he sold the material. The remainder of the salvaged wood was sold.

The contractor was also willing to assist BOSS Enterprises in identifying an end use for the engineered metal building. Although no purchaser could be found, in the interest of promoting maximum reuse, the contractor identified a client who was willing to accept the building for no charge and compensate the contractor for the labor involved in re-erecting the building. This was possible only because the hauler is a licensed contractor. The contractor was not compensated for the time he spent identifying the end user. On another project, marketing such difficult materials would be an added cost.

The doors and windows were donated to a used building materials yard. They were not valuable enough to command a price at the wholesale level. Other contractors might have a mechanism to resell these types of materials at the retail level for a nominal price.

The contractor estimates that a typical charge for hauling the debris, including tipping fees, would have been approximately \$900. The project did not incur this as a direct cost since the contractor performed this service in exchange for the value of the salvaged materials.

Further detail on the salvaged materials and the project costs and revenues is provided in Figures A, B and C, below.

Figure A.

Salvaged Materials

	Building 275	Building 416
Structure:	Redwood timber main frame with single partition support	Engineered metal frame w/galvanized sheathing
Dimension:	26' x 57' on concrete slab	22' x 45' on 2 x 6 tongue and groove Douglas fir decking
Walls:	7' at all perimeters	8.5' at all perimeters
Doors:	3	2 metal
Windows:	3 double hung, 2 fixed	2 metal fixed
Materials recovered:	<ul style="list-style-type: none"> • 2,186 board feet lumber (approx. 5,400 lbs.) salvaged for reuse • Approx. 500 lbs. galvanized corrugated siding recycled • Windows, doors salvaged for reuse 	<ul style="list-style-type: none"> • Entire building reused, including all siding and roof sheathing, doors and windows
Debris:	Approx. 900 lbs. leaded framing lumber, rotted siding, insulation, broken glass, split wood, misc. electrical hardware	Approx. 200 lbs. rotted 2 x 6 tongue and groove decking

Figure B.

Recovered Lumber

2 x 4	794 linear feet (lf) Douglas fir
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2 x 6	356 lf Douglas fir
1 x 12	154 lf Douglas fir
2 x 6	750 lf Douglas fir tongue and groove
2 x 6	402 lf redwood

Figure C.

Building Materials Disposition

Material	Disposition	Revenue/(Cost)
Approximately 1,300 board feet lumber	Retained by hauler for use in own recycled wood furniture manufacturing business (approx. value \$1.00 per board foot)	\$1,300
880 board feet lumber	Sold to local recycled wood retailer at \$0.25 per board foot	\$221
Engineered metal building	Client identified to accept building at no cost	0
Doors and windows	Donated to building materials reuse yard	0
Approximately 1,100 pounds debris	Approximate cost of hauling and tipping fees	(\$900)
	Net revenue (to hauler):	\$621

Lessons Learned

The NAS Alameda pilot generated important lessons for future deconstruction at NAS Alameda and other closing bases. The pilot project confirmed many of the anticipated benefits of deconstruction. Over 86 percent (by weight) of Building 275 was salvaged or recycled, diverting almost three tons of material from local landfills. Although the metal contained in Building 416 would likely have been recycled even in a demolition scenario, reusing the entire structure avoided the transportation and energy consumption required to recycle approximately 4,950 pounds of structural steel and other metal. In addition, a portion of the lumber reclaimed from Building 275 will be remanufactured into furniture by a local woodworking business, adding value to the local economy.

The contract also provided employment for the BOSS crew for eight days. While this may seem insignificant, small contracts are the bread and butter of small enterprises. In addition, the BOSS crew supervisor indicated that the work was particularly well suited to the skill level of BOSS' clients. Because of the similarity of the skills required by deconstruction and construction, programs such as BOSS can utilize both types of work as a training opportunity.

Although not all buildings at NAS Alameda will be as ideally suited for deconstruction, over a third of the 58 buildings sampled by the technical team were found to have good or fair salvage value. Since all of the approximately 450 buildings at NAS Alameda will eventually be removed to make way for reuse, perhaps as many as 150 of these may be considered for deconstruction in the future. The waste diversion and reuse benefits of deconstructing these buildings are significant.

However, the difficulty in bringing the project to completion has also illustrated a number of important conditions specific to base conversion which impact the planning and feasibility of deconstruction on closing bases. Several initial assumptions were proven to be questionable or incorrect.

It was initially thought that the long timelines involved in the base closure process would facilitate deconstruction. However, it was difficult to capture the benefit of this extra time during the NAS Alameda project because of the lack of any precedents for licensing or contracting. The development of the Addendum to the masterlease by EFA West and its acceptance by NAVFAC is significant. This document could serve as a template for future deconstruction on any closing Navy bases within EFA West's jurisdiction (West Coast Navy bases).

The project had hoped to identify federal funding which could be more efficiently used if directed to deconstruction. However, during the first phase of base closure, when the base is still under military operation, the imperative of the base command is to draw down operations. Far more pressing environmental clean-up issues and limited resources make military funding for deconstruction unlikely. At NAS Alameda, the base command indicated an early willingness to redirect limited Operations and Maintenance funding toward deconstruction of buildings which he hoped to remove before closure. However, this opportunity did not materialize.

In addition, military funding is prohibited by Congressional mandate from being used for reuse activities. Federal funds may only be used to remove buildings that pose a health or safety threat or which could be a liability to the US Government. In some cases, communities may be able to work with base commands to use deconstruction instead of demolition on such buildings. The NAS Alameda base command and Facilities Management Office were very interested in developing an innovative approach to draw down, but were limited by scarce funding and the timing of the closure process at NAS Alameda.

Once military operations had ceased at the base, during the interim phase, the interests and concerns of the local reuse authority become very significant for deconstruction. In particular, the need to derive income from interim leases constrains the opportunities for deconstruction during this phase. Since real estate values in the San Francisco Bay Area are extremely high, even marginal buildings were candidates for interim leasing. The ARRA was justifiably hesitant to remove buildings that had any leasing potential, even if those buildings are certain to be removed later. In other areas with less aggressive real estate markets, reuse authorities may be more driven by the need to clear marginal buildings in order to make sites more attractive to developers. In this case, a community could work with the local reuse authority to use deconstruction instead of demolition.

Another difficulty associated with the interim phase of base closure is the division of authority over the property. While the Department of Defense still holds title to bases at this phase, the local community may have negotiated some interim use arrangement. The community may be eager to begin activities that facilitate reuse, while the facilities engineering command is concerned solely with maintenance of the property until it is transferred. Deconstruction during this phase may require an amendment or change to the interim lease between the local reuse authority and the Department of Defense, a policy decision by military authorities beyond the local level, and a military review of environmental and historical issues. These activities require the allocation of staff time and are not likely to be seen as a priority by the military. The use of the Amendment developed for the NAS Alameda project as a template would likely mitigate this situation.

The project team initially assumed that the interim phase would provide the most opportunity for deconstruction, since the transfer process may take years (in some cases, decades). However, the NAS Alameda case seems to demonstrate that large-scale building removal is likely to be postponed until it can be included in the developer's scope of work. In addition to the difficulty of obtaining funding for deconstruction in the early stages of conversion, many LRAs may be reluctant to remove buildings with interim leasing potential.

However, in the private sector, deconstruction is often limited by the need to remove buildings quickly to make way for development. Developers' timelines typically allow little scheduling flexibility. The potentially lengthy timeline for draw down and interim use may best be used for planning deconstruction which will occur in later stages of conversion.

During early stages of closure, advocates should initiate discussions to educate stakeholders about deconstruction and lobby for the inclusion of deconstruction in the formal base closure process to the greatest extent possible. The impact of demolition and the alternative to use deconstruction should be included in the Environmental Impact Statement (EIS). Provisions for deconstruction can also be included in the reuse plan. At the Treasure Island Naval Base in San Francisco, deconstruction as an economic development activity has been incorporated into the legally binding agreement with homeless services providers. In addition, advocates should work with the appropriate civilian jurisdictions to adopt policy language encouraging or requiring the eventual developer to include deconstruction in base redevelopment.

One of the major accomplishments of the NAS Alameda pilot was in the licensing precedent established by the masterlease amendment and in having demonstrated deconstruction to the local reuse authority and city planning officials. A pilot in the early phases of conversion may not be able to encompass large-scale deconstruction, but it may be a useful means of demonstrating the viability of deconstruction.

Other communities may also find a pilot useful to work through various local issues prior to implementing deconstruction on a larger scale. The pilot should be planned early enough in the closure process to allow for the follow-up necessary to include deconstruction in later development.

Base closure presents distinct opportunities and challenges for conversion in a larger sense. Many communities are re-evaluating long-held assumptions and exploring ways to create sustainable development alternatives. The NAS Alameda pilot showed deconstruction to be comparable in cost to demolition, a valuable employment and training opportunity and successful in diverting valuable resources from the landfill. While capturing these benefits on a wide scale will still require significant changes in the current base conversion process, the social and environmental benefits of deconstruction are significant. Developing base closure policies which embrace and incorporate deconstruction could create exciting new avenues for including sustainability in the base conversion process.

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