

**NORFOLK NAVAL SHIPYARD
QUARTERS D&E AND G&H
A Case Study in Adaptive Rehabilitation**

**Buildings 705 & 706
Norfolk Naval Shipyard, Portsmouth, Virginia**

Commander, Navy Region Mid-Atlantic

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**Dutton + Associates, LLC
Cultural Resource Survey, Planning, and Management**

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BACKGROUND

In 2008, Naval Facilities Engineering Command, Mid-Atlantic (NAVFAC MIDLANT) awarded Defense Base Closure and Realignment Commission (BRAC) project P-214V, which involved an adaptive rehabilitation of two historic buildings at the Norfolk Naval Shipyard (NNSY) in Portsmouth, Virginia. The project consisted of renovating Quarters D&E and G&H (Buildings 705 and 706) to convert them from vacant residential buildings into usable office space. It took place over a period of two years at a cost of nearly \$8.4 million. The buildings were completed and put into operation in July 2010.

This project was undertaken to implement the 2005 BRAC report recommendation to relocate two offices from Naval Station Annapolis and Navy Philadelphia Business Center to the NNSY. To house the new activities, the shipyard would need to provide office space for approximately 60 new employees, or 22,464 square feet. A review of potential facilities by shipyard staff identified Buildings 705 and 706 (Quarters D&E and G&H) as viable candidates for the needed space as the combined square footage within them was approximately the same as the space needed.

Further, both of these historic buildings were considered contributing to the shipyard Historic District, had been vacant for an extended period of time, and were in danger of demolition. Adaptively rehabilitating these buildings provided the Navy with an avenue to retain and preserve these significant historic buildings.

Buildings 705 and 706 are significant components of the NNSY and the shipyard Historic District because they are two of the oldest remaining residential buildings. Building 705 (Quarters D&E), was one of the four original residential buildings constructed at the yard in its earliest period of development and Building 706 (Quarters G&H) was one of only several buildings, and the only residence, constructed at the yard during the post-Civil War Reconstruction-era. Both buildings are located in the Gosport Yard precinct of the shipyard and represent two of only three remaining historic

KEY STAKEHOLDERS

Owner

Commander, Navy Region Mid-Atlantic

Tenant

US Navy, Naval Sea Systems Command

Design/Construction Agent

NAVFAC MIDLANT

Architectural and Engineering

*HBA Architecture & Interior Design, Inc.
Virginia Beach, Virginia*

Structural Engineers

*Stroud, Pence, and Associates, Ltd.
Virginia Beach, Virginia*

Mechanical Engineers

*Bowman, Foster & Associates, PC
Norfolk, Virginia*

Civil Engineers

*Hoggard-Eure Associates, PC
Portsmouth, Virginia*

General Contractor

*John C. Grimberg Company, Inc.
Rockville, Maryland*

State Historic Preservation Office

Virginia Department of Historic Resources

duplexes in this section. The Gosport Yard precinct comprises the initial core of the shipyard and as such, represents an important aspect of the growth and development of the installation. Both buildings were constructed as officers housing, giving them important associations to the command and operation at the shipyard, and both are excellent examples of their particular architectural styles.

The completion of an adaptive rehabilitation project of this size and scale requires an extended period of time and many people working together. The project lasted nearly five years from the date the buildings were selected until they were move-in ready. Five specialty firms employing dozens of people, as well as numerous Navy personnel, and State Historic Preservation Office (SHPO) staff worked on the project. The following summary highlights key elements of the process and lessons learned. Additional detail on the rehabilitation and its various elements is available as a companion document to this summary.

ASSEMBLING FINANCING

Securing funding for a rehabilitation project such as this can be challenging especially where funding requests for renovations and improvements to administrative space typically receive less priority than those for specialized and operational projects. Fortunately, this project was initiated and funded by the BRAC program and therefore did not require the use of regular operations and maintenance (O&M) or military construction (MILCON) funds.

COSTS

Even with BRAC sponsorship, securing funding for a rehabilitation project such as this can be difficult as the prevailing attitude is that renovating an existing structure, particularly when historic preservation is involved, costs more than new construction and is therefore not a justifiable expenditure of funds. Unlike the private sector, there are few financial incentives for federal agencies to do rehabilitation, such as historic rehabilitation tax credits or other cost reducers. As such, making the case for rehabilitation of an existing federally-owned structure versus new construction requires additional creativity and persistence when identifying potential funding sources.

The initial estimate to complete this project was over \$12 million, which was almost to a level that would make the project cost-prohibitive. However, once a formal project estimate and funding request was completed, the total estimated cost was reduced to \$9.5 million.

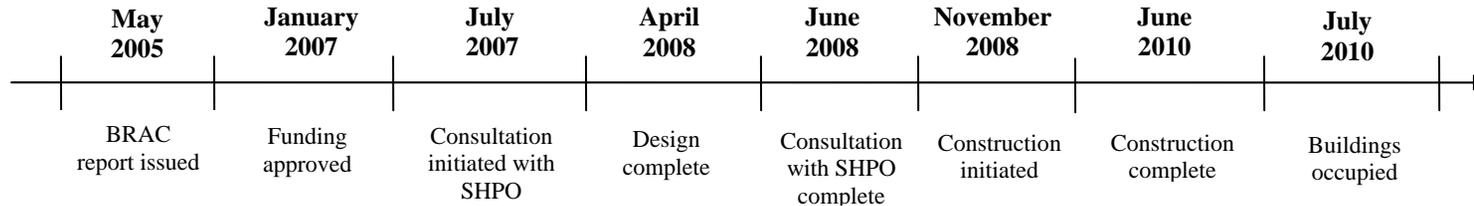
PROJECT BUDGET	
Design Production:	\$400,000
Site Work	\$275,000
Hazardous Material:	\$1,268,000
Demolition:	\$891,000
ATFP:	\$84,000
Land Acquisition:	\$122,000
Systems	\$2,142,000
Construction:	\$3,168,000
TOTAL	\$8,350,000

Because BRAC only provides funds for those project components that are necessary to make buildings usable, and limits spending on non-vital elements such as specialized preservation work, the final authorized amount for the project was closer to \$8.4 million. While new construction of the same amount of space on a secure facility can run anywhere from \$5.5 to \$6.5 million, it is important to consider *all* costs associated with new construction, such as demolition and removal costs, as well as abatement of hazardous materials. In addition, demolition of historic buildings will likely have a historic preservation mitigation costs. When cost comparing rehabilitation versus new construction make sure that you consider all associated expense with new construction, which frequently can reduce the differential between new construction and rehabilitation.

COST COMPARISON		
	Rehabilitation	New Construction
Design Production	\$400,000	\$375,000
Construction Costs*		
Site Work		
Site preparation (excluding demolition)	\$131,000	\$131,000
Paving and improvements	\$144,000	\$144,000
Demolition**		
Garages and building additions	\$891,000	\$891,000
Buildings 705 & 706 (including hazardous material disposal)		\$1,000,000
ATFP (Site and architecture)	\$84,000	\$84,000
Land Acquisition (ATFP requirement)	\$122,000	\$122,000
Building construction costs		
Hazardous material abatement Buildings 705 and 706	\$1,268,000	
Systems		
Mechanical	\$326,000	
Electrical	\$1,306,000	
Built-in equipment (lifts etc.)	\$214,000	
Information technology	\$296,000	
Construction (General cost excluding systems)	\$3,168,000	
Total building cost	\$6,578,999 (\$293/SF)	\$6,000,000 (\$267/SF)***
TOTAL CONSTRUCTION COST	\$7,950,000	\$8,372,000

* Excludes costs of furniture and tenant specific equipment.
 ** Demolition costs can range considerably depending on the individual property and unique requirements. These figures represent the upper end of that range.
 *** Based on estimates to construct new equivalent square footage.

PROJECT TIMELINE



THE REHABILITATION

Buildings 705 and 706 ceased to function as residential quarters in 1999, and became vacant at that time. Over the next decade, the buildings were allowed to succumb to deterioration and fall into a severe state of disrepair. Fortunately, even in their deteriorated state, the structural components of both buildings were still sound and intact, and most of the significant historic details present.

Because Buildings 705 and 706 are contributing to the shipyard Historic District, which is eligible for listing in the National Register of Historic Places (NRHP), all project work had to be coordinated with the Virginia SHPO and take into account the Secretary of the Interior's Standards and Guidelines for the Rehabilitation of Historic Properties. To ensure an acceptable design was created, NAVFAC MIDLANT and their hired architect met with the Virginia SHPO prior to holding the design charrette in order to agree on pertinent preservation issues and identify a list of preferred treatment options to be incorporated into the rehabilitation.

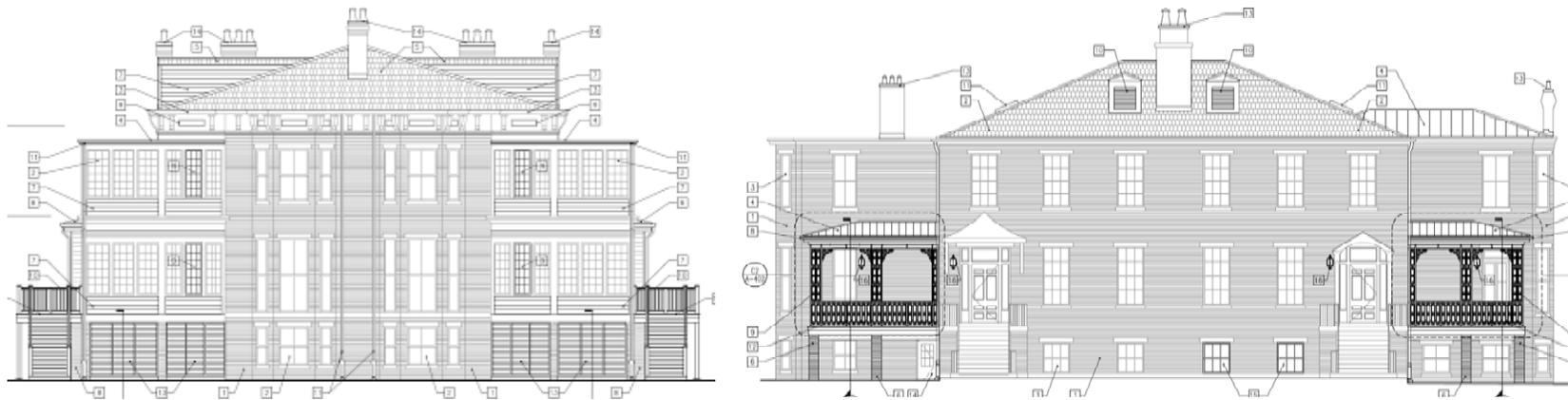
Rehabilitating the buildings was a lengthy job that required extensive physical renovations to the buildings, as well as the project site. Site work included clearing overgrown vegetation and debris and removing dilapidated garages from the property. The ground had to be leveled and drained, new underground utilities installed, and a new parking lot to accommodate employees created and paved. Building rehabilitation work was preceded with the removal of a large amount of lead, asbestos, and other hazardous materials. Both buildings were then structurally reinforced to support the increased loads they would be under from their new function. In addition, large additions were appended to the rear of both buildings to increase their size, as well as provide space for modern utilities, kitchens, restrooms, and handicapped lifts, all functions that were difficult to incorporate into the shell of the historic buildings. New systems including wiring, lighting, HVAC, telecommunications, and fire suppression were installed throughout the buildings. Replacement roofs were installed on both buildings and exterior brick walls cleaned and tuckpointed. Throughout the process, historic finishes and materials were preserved and repaired where possible, including interior floors, walls, woodwork, and built-ins, which were cleaned, restored, and repainted.

SUCCESSSES AND CHALLENGES

As with any rehabilitation, the work on Buildings 705 and 706 had both successes and challenges along the way. Some project components went exactly according to plan while others posed difficulties and setbacks. Key areas where success or failure can dramatically influence project outcomes include building selection, financing, bid process, site planning, architectural design, preservation design, construction and site work, and historic preservation. The success and challenges in each of these areas for the rehabilitation of Buildings 705 and 706 are summarized below.

Building Selection

The process in which Buildings 705 and 706 were selected was somewhat atypical. Both buildings had been vacant for several years with no foreseeable future use when the BRAC report was issued. Coincidentally, the two buildings together had nearly exactly the amount of space needed, and the Virginia SHPO, as well as Navy cultural resources staff had been lobbying the shipyard for several years to find a use for the buildings. Perhaps the greatest challenge in building selection was convincing all stake holders that rehabilitating two historic buildings was a better choice than new construction. Various Navy personnel expressed concerns stating there are too many contingencies associated with historic rehabilitation and that the project time and cost would far exceed that of new construction. In this particular case, it was the availability of BRAC funding, combined available square footage that met the needs of the relocated tenants, and a commitment to the Virginia SHPO that potential adaptive reuses of these buildings would be investigated that made rehabilitation the preferred alternative.



Financing

Securing financing usually is one of the most challenging parts of any development project, and under normal circumstances, the NNSY would have had to compete region-wide for MILCON funding, which is especially difficult to obtain for projects involving renovation of administrative space. This project was feasible because BRAC funding enabled renovation of administrative space that met requirements of the two Commands relocating to the NNSY. The downside to BRAC projects however, is that they are very specific as to what the money may be used for. Project expenses can only include those renovations that are considered necessary to make the building operable and in many cases, such expenditures do not include all renovations necessary of work required to meet the Secretary of the Interior's Standards. In this instance, success was achieved through the availability and use of BRAC funding and strict budgeting and cost controls.

Bid Process

To keep costs down and stay within the approved budget, a Design-Bid-Build method was chosen. This enabled the NNSY to obtain a good design which incorporated the new tenants' needs while respecting the historic character of the buildings. Historic preservation criteria and considerations identified during early discussions with the Virginia SHPO and Navy cultural resource staff were applied in the selection process in order to identify an architectural and engineering (AE) firm and general contractor (GC) with the appropriate skills and experience to work on historic buildings. This process also ensured that sub-consultants and the contractor were appropriately qualified and aware of the project's preservation goals.

Site Planning

Planning and civil engineering for a development project can be a challenge anytime an already developed site is used, as is the case when an existing building is renovated. Existing conditions can provide limitations, especially when landscape features and elements are considered character-defining features of the historic



property. Providing new utilities, infrastructure, and other site work may require special design work or nontraditional approaches. For Buildings 705 and 706, utilities, infrastructure, and other site features were already present or nearby at developed sites, and thus could be tied into to cut costs. Another challenge with site planning is the recent emergence of Anti-Terrorism Force Protection (ATFP) requirements. ATFP requirements dictate many aspects of site and architectural design and can significantly affect the cost and viability of a rehabilitation project if not taken into consideration early.

Architectural Design

The challenge to producing the architectural design for this project was to create modern and functional space while retaining the historic character of the buildings. This was made more difficult by the fact the buildings had to be converted from residential use and layouts, to multiple-tenant office spaces. All aspects of the design had to meet current code requirements for structural loads, fire egress, and Americans with Disabilities Act (ADA) issues, as well as provide adequate plumbing, electrical, HVAC, and telecommunications equipment; all within the existing structures. One of the biggest overall challenges for the design was to meet ATFP requirements, which imposes strict regulations on building construction, layout, and materials.

The raised- two story forms of the buildings facilitated the addition of mechanical systems with equipment and piping placed in the basements and attics to serve the first and second floors respectively. To incorporate other elements (e.g. kitchens, bathrooms, ADA access, etc.) additions were appended to the rear of both buildings. Similarly, ATFP was addressed in a number of creative ways, including use of blast-grade storm windows, which enabled retention of original wood windows, and classification of the buildings as two-story made possible by not utilizing basement areas for personnel.

Preservation Design

In addition to designing the buildings to meet necessary code requirements and the needs of the prospective tenants, the design had to preserve as much of the historic character of the buildings as possible. This meant respecting the original



layout and configuration, preserving historic and original materials, and hiding new updates and equipment. The historic preservation coordination and review process can provide challenges to timelines and budgets because of the 30-day review period. To eliminate the likelihood for delays once the project commenced, representatives from the Navy and the design team met with the Virginia SHPO to develop a list of pertinent preservation-related issues and goals before the design charrette which allowed potential problems to be worked out early. As with any work involving historic buildings, unforeseen issues did arise during design and construction, and in some cases, the project team could not always incorporate the Virginia SHPO's preservation recommendations or retain various building components because of code requirements or budget restraints. In the end, early consideration of historic preservation issues and frequent communications limited budget and schedule impacts due to unanticipated events.

Construction/Site Work

The physical construction at the project site generally went according to plan except for a few instances when unforeseen issues or problems arose forcing project managers to make decisions and sometimes changes to the design in the field. Many unforeseen issues that arose during construction were able to be resolved through creative responses by team members without causing loss of time or increased costs. All requests for information (RFIs) from the construction team went to the Navy's construction manager where either a field decision could be made, or were forwarded to the architect. In almost all cases, response times from both team members were prompt which allowed construction to stay on schedule. There were several instances when field decisions and change orders had to be made quickly, and did not always allow time for input or comment from the Navy's historic resource team or the SHPO.



Preservation Issues

The historic nature of the project and the need to preserve as many of the character-defining elements and materials in the buildings as possible to meet the Secretary of the Interior's Standards required special consideration be given to construction practices and techniques. The project was fortunate in that the general contractor, and specifically the construction superintendent, had historic preservation skills and experience enabling them to ensure project goals were met.

Even so, working with and preserving many of the historic materials and elements not typically encountered on rehabilitation projects posed difficulties for the construction team. During construction, there were several cases where actual conditions did not match anticipated conditions, and design changes had to be made to accommodate preservation goals. For instance, once construction commenced it became apparent that some of the historic materials and features originally scheduled for retention were in worse condition than expected and alternate plans had to be made. Creative solutions and a little extra care and consideration on the part of designers and contractors however, allowed the project to be completed on time and within budget while respecting the historic character and significance of the buildings.



Archaeological Issues

A Phase I Reconnaissance and subsequent Phase II Evaluation study identified potentially NRHP-eligible archaeological features to the rear of the buildings. Avoidance of this area was not possible so data recovery ensued to fully excavate, record, and document the archaeological features. Before any soil disturbance could occur in this area, the archaeological data recovery had to take place and an end of fieldwork report had to be approved by the SHPO. Archaeological excavations revealed the remains of a brick planter and associated construction trench, a brick and mortar foundation, a shell and sand drainage field, a brick drain, and various 19th century artifacts. These features provided information on landscaping and water control alterations that occurred over the years.

Conclusions and Lessons Learned

While there were challenges along the way, the rehabilitation of Buildings 705 and 706 at the Norfolk Naval Shipyard is heralded as a successful project. Two vacant historic buildings threatened with demolition were preserved, the tenants' needs were accounted for, and preservation goals were met; all completed under budget. Everyone involved with the project, from the initial planning to implementation to completion, is happy with the results and came away from the project with a positive experience. The general contractor plans to use the project as a model of historic rehabilitation for future clients. The prospective tenants are thrilled with the space and could not wait to move in and several shipyard personnel have expressed interest in having an office in one of the buildings. The Virginia SHPO believes that the historic character of the buildings was well respected and commends the Navy on the project.

Even with all the successes of the project, there were challenges and difficulties along the way. It is important to recognize what lessons were learned so that future historic rehabilitations can be performed by the Navy and other Federal agencies more frequently, effectively, and efficiently.

The first step to undertaking a successful historic rehabilitation is selecting a good candidate building(s). Choosing the right building to renovate can make huge differences in the amount of time, money, and effort needed to carry out the project. It is important to know what the intended use of the building will be following the rehabilitation and determine whether the building's location, size, and layout lend themselves well to that use. It is also vital to understand what makes that particular building historically significant and what preservation issues are likely to arise. This will allow the design and construction processes to proceed quicker. Discussion and coordination should take place early with the installation cultural resource personnel and SHPO. Another important aspect to not overlook in the planning stage is whether or not there are archaeological features present at the project site that need to be considered. Late discoveries of this nature can create significant delays and increase the project cost substantially. Additionally, it is critical that the Cultural Resource staff be immediately notified of any unanticipated archaeological discoveries.

Over the last decade, the emergence of ATRP has also made it important to understand what issues these requirements may generate during a rehabilitation and whether the selected building will have any inherent hardships with meeting them. Buildings located near installation boundaries provide extra challenges because of clear zone requirements. Buildings over two stories tall have to meet progressive collapse requirements, which can be difficult for historic buildings. Buildings that will hold more than 49 employees have even stricter sets of ATRP requirements. While these issues should not preclude the selection of historic buildings that may not fit all of these criteria; ways to resolve ATRP issues should be taken into consideration at an early stage. It should be noted that buildings to be used for residential purposes following rehabilitation do not need to meet ATRP requirements.



Once a building has been selected for reuse it is important to find an architect with experience in historic preservation and rehabilitation so that a sensitive design can be produced that meets both project goals and the Secretary of the Interior's Standards. It is also important to ensure that if the architect does outsource the engineering work, that the selected sub-contractors have experience with and an understanding of historic preservation and the project's rehabilitation goals. A Design-Bid-Build method of delivery is preferred for rehabilitation.

Open and active communication between the owner, consultants, and SHPO is critical. A lot of time and money can be lost if the project gets too far into the design process without SHPO consultation, only to later find out that it does not meet with their interpretation of a sensitive rehabilitation. It is extremely beneficial to hold a meeting with the architect and SHPO as soon as an initial design has been developed to discuss and work out potential historic preservation issues before final plans are established. It would also be advantageous to establish an agreement with the SHPO during this initial phase to develop an agreed upon review process and response time that is less than the standard 30-day turnaround.

Once the design is complete, assembling a good construction team is the next vital step in the rehabilitation process. In preparing the request for bids, it is necessary to formulate specific factors that the potential contractors will be evaluated on. Particular emphasis should be given to previous experience with historic preservation and historic properties. It is also important to identify who the Project Superintendent will be and what their qualifications and experience are with historic rehabilitation projects. A selection process that ranks potential contractors on their experience and knowledge of preservation first, and on bid price second, is advisable.



Once construction commences, open and active communication between team members becomes pivotal once again. Because unforeseen issues will arise when working on historic buildings, it is important that workers bring these issues to the attention of the superintendent or construction manager immediately so that informed decisions can be made in the field, or passed on to the architect or SHPO if needed. Knowing when issues warrant discussion or consultation is a challenge, especially to those workers or subcontractors who are not familiar with historic preservation or the Secretary of the Interior's Standards. Setting expectations and identifying critical issues for all construction personnel and subcontractors early will limit uninformed decisions. Therefore it may be worthwhile to provide a quick briefing on basic preservation principles at the outset of the project to anyone involved at the project site. An intensive lesson on historic preservation theory is not necessary but rather a quick presentation followed by a Q&A session would likely suffice. This could be given by the installation's cultural resources staff, a representative from SHPO, or even the construction manager if they have already been briefed on the topic.

This particular project worked well for a number of reasons. The Navy had made an informal agreement to try and preserve the two buildings. When the 2005 BRAC report recommended the relocation of two outside departments to the shipyard, additional office space was needed to house them, and the combined square footage in the two buildings was almost exactly the amount necessary for the relocated tenants. Had BRAC not provided the funding for the project, the rehabilitation of these two buildings would likely have not been possible. With funding in place, the Navy was able to summon the services of an AE firm with previous experience in historic rehabilitation who were able to prepare a sensitive design for the building. Upfront coordination with the Virginia SHPO at a face-to-face meeting allowed issues to be discussed and worked out early in the planning process. Well designed and responsive plans also facilitated submission of more responsive and realistic proposals to the



Navy who was then able to select the best possible general contractor. Selection of a general contractor with past experience in historic rehabilitation resulted in completion of the project in a timely and cost effective manner all while successfully adhering to the preservation guidelines established by the SHPO at the project outset. The rehabilitation of Buildings 705 and 706 was successful for a number of reasons; some chance such as building availability and funding, some through careful planning and hard work, but most importantly, as a result of open communication between a project team dedicated to achieving the Navy mission while taking into account and balancing the requirements of historic preservation.

LESSONS LEARNED

- *Expect unforeseen issues* to arise and have budgeted time and money for them.
- *Maintain open and active communication* from project initiation through completion.
- *Understand ATFP requirements* and how they will relate to your project.
- *Consult with your SHPO early* to identify design issues.
- *Inform key decision-makers* of historic preservation requirements and the Secretary of the Interior's Standards.
- *Assemble a qualified and experienced Development Team.*
- *Avoid uninformed decisions.*

