

TME

The Military Engineer

52 Nearing Net Zero
Ahead of Schedule

58 Ensuring Alaska's
Strong Military Future

61 Preserving History
Through Design-Build

68 A Unique Renovation
at Hermann Hall

72 Inside the Coast
Guard Industry Academy



Exterior view of Grant Hall as it exists today reflecting the 1870-style renovations. PHOTO BY HOACHLANDER DAVIS PHOTOGRAPHY

PRESERVING HISTORY THROUGH DESIGN-BUILD

While there are challenges in applying design-build to historic renovation projects, the right partnership and processes can overcome them, leaving the positive benefits that attract owners and contractors to this delivery method.

By Matthew Chalifoux, FAIA, M.S.A.M.E.

Over the last 25 years, design-build has been increasingly utilized for project delivery—especially at the federal level. In 2013, data collected by RS Means Market Intelligence for a study commissioned by the Design-Build Institute of America showed that over 40 percent of non-residential construction market share was being delivered through design-build, just 10 percent less than the traditional design-bid-build process. Since 2013, the gap

between the two has continued to narrow. Further, design-build is being used on an increasingly broader range of project types, including historic preservation.

Over the last 30 years, historic preservation projects have become much more common and accepted, but there are certain aspects of these specialized projects that vary from typical construction. First, they involve an existing building that has been identified as historically significant. Second, before a project can be properly scoped and budgeted, a deep understanding of the physical structure and relevant documentary resources must be gathered to ensure that design decisions and the project approach will not negatively impact the historic property. Finally, historic preservation typically requires review and approval from an outside agency, such as a local historic preservation commission or a State Historic Preservation Office, which can result in modifications to a proposed design.

To an owner, there are three key benefits of utilizing design-build: managing a single contract; greater cost and schedule certainty; and cross-discipline creativity that can provide cost savings, expedited schedules, and innovative solutions.



To realize the full benefit of the design-build process, the project sequence is collapsed. The proposal comes from a combined design and construction team and includes all planning work, design, documentation, and construction. Key to success is the development of a request-for-proposal that has sufficient information to allow the design-build teams to submit a fair and comprehensive proposal. This bridging document is typically developed by a separate design team that is precluded from bidding on the full project. Bridging documents are developed to a preliminary or schematic design level, allowing bidders to develop solutions that meet the project requirements as efficiently and cost effectively as possible.

Applying design-build to a historic preservation project raises the question of when and how detailed building evaluation and documentary research is embedded in the process. If this is required of the design-build team, it will not have this information when developing the fee proposal, which can result in the inclusion of allowances or qualification statements, eliminating the cost surety that the owner seeks. If the investigative work is done as part of the bridging documents, it is being executed by a separate team and the project loses continuity of knowledge when the design-build team is brought on board. If the investigative information is thorough and well organized, this transfer may be smooth; but if there are gaps in the information that are not filled until the design-build team has started work, it can also negatively impact the project cost and the schedule.

A pair of recently completed historic preservation projects involving EYP Architecture & Engineering illustrates the challenges of using the design-build process, but also the potential benefits.

GRANT HALL, FORT MCNAIR

Grant Hall, located on the grounds of Fort McNair in southeast Washington, D.C., is a remarkable story of survival. Constructed around 1832 as an extension of the Federal Penitentiary built in 1829, the building played a key role in American history. From May 9–June 30, 1865, a Military Tribunal convened on the third floor of Grant Hall in judgement of the eight conspirators arrested in the assassination of President Lincoln. Just five years later in 1870, the exterior and interior of the building were radically altered to reuse the building as officers' housing, turning the Georgian revival penitentiary into an Italianate residential structure.

In 2010, EYP was hired as part of a design-build team with



The recreated trial room on the third floor of Grant Hall. PHOTO BY HOACHLANDER DAVIS PHOTOGRAPHY

contractor Polu Kai Services to renovate Grant Hall. Overseen by the Baltimore District of the U.S. Army Corps of Engineers, the project included recapturing the 1865 appearance of the third-floor trial room. The design-build team was provided a set of bridging documents that provided a schematic level of design. A critical element of the third-floor design was “reclaiming” a series of columns that bifurcated the trial room, visible in period lithographs. When the team visited the space prior to submitting the proposal, concerns were raised about the accuracy of the proposed design in the bridging documents, particularly as it related to the location of the columns and the potential structural implications.

Discussions with the owner revealed that the team which developed the bridging documents was offered limited access to the building for investigative purposes. This gap in detailed physical analysis required them to make assumptions, including that the columns were buried in an 1870 masonry wall. When the EYP-Polu Kai team submitted its proposal, a budget item was included for research and investigative removals to confirm the final design.

Based on research, the team believed that the columns were not located in the line of the masonry wall and to recreate them would require structural modifications to both the floor and roof impacting the cost of the construction. A benefit of working as a design-build team was that EYP-Polu Kai could self-perform the investigative removals quickly and cost effectively. Ultimately, the findings confirmed the position regarding the location of the columns. A revised schematic design, including structural modifications, was developed and submitted for review with a modified cost proposal. Working with the owner, the team then was able to evaluate the scope and approach to the entire project, allowing the reconstruction of the trial room to be accomplished within the original budget.

HISTORIC WATCHBOX, WASHINGTON NAVY YARD

The Historic Watchbox at the Washington Navy Yard in southwest Washington, D.C., is a strong testament to the concept of adaptive reuse. Constructed in 1842 just inside the main gate of the Navy Yard, this diminutive wood frame structure, with a footprint of only 26-ft by 29-ft, served as the check-in point for visitors to the base.

As the Navy Yard expanded in the late 19th Century, the need for the Watchbox was eliminated and in 1906 the building was removed to make way for a new fire house. Surprisingly, it was not demolished. Rather, a portion of the building, the 13-ft square core, was floated down the Potomac River for use at the Naval Support Facility Indian Head. In this reduced size, the structure was moved multiple times within the Indian Head facility, serving as the main telephone exchange and ultimately as a storage shed for the grounds crew.

In 2014, EYP was contacted about the Watchbox by a frequent design-build partner, Summit Construction, which was already working with Naval District Washington to remove a deteriorating historic pier on the Anacostia River at the installation. As a contributing element in the Washington Navy Yard Historic District, the removal of the pier went through a Section 106 review process, which resulted in a Memorandum of Agreement covering mitigation for removal of the pier. There was one paragraph in the agreement that required the relocation of the Historic Watchbox to the Navy Yard and restoration to its 19th Century appearance. A narrative description of the scope of the restoration was provided, but no drawings or specifications.

The restoration scope was based on historic photographs and limited evaluation of the surviving portion of the building. The narrative scope included a new foundation at the Navy Yard, carefully moving the Watchbox back up river, set in place, the porch reconstructed and the exterior repaired and repainted. Summit Construction, in submitting the proposal for the much larger pier project, had included a line item cost for the Watchbox based on the narrative scope.

When EYP was engaged, the proposal included evaluation of the surviving building fabric to correlate the physical evidence with the historic photographs and narrative scope. The evaluation identified two aspects of the building that varied from the restoration scope. First, the door and window openings had been moved on two of the elevations. Second, the existing flooring and structure were a



Restored Watchbox, Washington Navy Yard. PHOTO BY CHRIS SPIELMANN PHOTOGRAPHY

later modification and did not exist at the Navy Yard. A summary report and a revised schematic design proposal was developed by and submitted to Naval Facilities Engineering Command for review and to be shared with the State Historic Preservation Offices in both Maryland and the District of Columbia. All the review authorities approved the adjusted design.

By October 2015 the historic Watchbox had been carefully floated back up the Potomac and reinstated as part of the Washington Navy Yard, just over 100 years after it had departed.

EFFECTIVE PARTNERSHIP

These projects illustrate the power and challenges of utilizing design-build when working with historic buildings. In both cases, design and construction capabilities were leveraged when issues arose that allowed the team to course correct. Working in partnership, the teams were able to deliver projects that were sensitive to the historic building while fitting within a cost and time model that was critical to the owner.

At the same time, both cases illustrate the risks of engaging a design-build team without execution of sufficient investigative work demonstrated in the bridging documents. The impact of these gaps in knowledge were mitigated by the relatively small size of the projects, but as much larger and complex historic preservations are executed using design-build, the potential cost and schedule exposure increases dramatically.

Through proper planning and by engaging experienced, qualified design-build teams, these risks can be minimized to the benefit of owners and their valuable historic buildings.

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