



The exterior of the 81,500-ft<sup>2</sup> NCTER mixes classic brick veneer and metal roofing to merge the facility with adjacent structures, while the interior main entry includes a spacious, two-story lobby and grand stairway that conveys a sense of procession and dignity. PHOTO BY PETER MALINOWSKI, COURTESY OF VOA ASSOC. INC.

# High-End Design Meets Cost-Saving Procurement

Producing a building with high-end objectives within the cost-saving procurement framework typical of the design-build process can be accomplished through precise communication and painstaking collaboration.

BY DOUG LAMBRECHT, AIA, M.SAME

When contemplating a Design-Build project, the traditionally established goals are to achieve expedited project delivery and the leanest of construction costs through a competitive method involving both the design and construction team. But what happens to this approach when cost saving goals are superseded by the goal of constructing a design showpiece?

The traditional Design-Build formula establishes the minimum standards of quality and finish that will satisfy functional, code and durability requirements through published requests for proposals. This method is designed to allow competitors to price the most effective construction methods for expedience and economy.

When users and agencies are tasked with issuing a set of criteria for pricing unusually upscale design requirements with a higher level of function and finish, the process enters uncharted territory.

## PROJECT SCOPE

The job of developing a valid design and construction program for a “high end” facility—the National Center for Explosives Training and Research (NCETR) at Redstone Arsenal, Huntsville, Ala.—was given to VOA Assoc. Inc. Working within the standard Design-Build format, VOA served as Architect of Record and Interior Designer under prime contract holder and general contractor, Sauer Inc., Jacksonville, Fla., for the new 81,500-ft<sup>2</sup> NCETR headquarters and training facility. Managed by the U.S. Army Corps of Engineers Mobile District, Redstone Of-

fice, the NCETR was planned to serve as the nation’s foremost explosives and forensic training research and knowledge center.

The primary design goal was to provide secure access and facilities to establish a state-of-the-art learning environment that includes classrooms and labs dealing with highly sensitive materials. In addition, the design directives required the new facility to fit seamlessly within the context of surrounding buildings and to present a “corporate” professional image and grand sense of entry for visitors to the conference center.

The accepted design uses an exterior materials palette of classic brick veneer and metal roofing that enables the facility to merge with adjacent structures while providing an impressive corporate image. Inside, a main entry with spacious, two-story lobby and grand stairway conveys a

sense of procession and dignity. Throughout, a sophisticated level of interior finishes pairs with state-of-the-art technology to present an ideal setting for students and instructors within the confines of a secure space for daily operational training and research management. Integral design consideration involved creating a floor plan that accommodates several echelons of security, including sensitive compartmented information facility (SCIF) level rooms, vaults, and communications and data security arrangements.

### DESIGN CHALLENGES

The beginning challenge was twofold: establish the relationship of laboratories designed for both training and research functions; and develop a thorough understanding of the forensic characteristics of explosives requiring extremely sophisticated equipment and higher quality design materials and finishes. To that end, specialized audio visual systems incorporated for instructional purposes were installed to be interactive with the building-wide data and display system for presentation and teaching in adjacent lecture classrooms. Additionally, each laboratory is outfitted with fume hoods and point of use exhaust snorkels as well as state-of-the-art forensic analysis equipment complemented with video display teaching equipment.

The first floor also includes a mock court classroom with a raised judge's bench, witness stand, tables for the defense and plaintiff, a jury box and gallery for training in presenting evidence in actual courtroom situations.

A dedicated Conference Center used for public presentations, building-wide lectures and orientations, features a "tiered" floor space and is outfitted with smart desks that are tied into the data and audio visual systems to facilitate interactive presentations as well as telecasts from remote locations. A directive that the Conference Center also serve as an Emergency Operations Center (EOC) during periods of high alert involved additional considerations regarding locating the space to allow it to be cordoned off and separated from the 'non-secure' areas of the facility and equipping it with the req-

uisite technology and EOC audio-visual interactive equipment to sustain activity, along with sufficient emergency power generation equipment.

To accommodate the close relationship between outdoor training areas with indoor forensics labs and lecture areas, the design program paid close attention to affording accessibility between outdoor forensic events and transport of materials inside. For example, a specially-equipped out-building with cleanup and boot wash areas helps in moving materials and people from testing areas to the main building laboratories for forensic examination and then into the classrooms for examination.

The diverse, highly sensitive nature and use of the facility also posed significant design challenges, including extensive study of the Sound Transmission and STC ratings from one area to the next and within the secured compartmentalized information area. Each of these groups of spaces have somewhat conflicting purposes from a design standpoint and are all tied to separate and conflicting security and technological requirements.

Perhaps the greatest challenge, however, occurs when these conflicting requirements also must satisfy the mandate of necessitating showplace finishes that speak to a high level of visual aesthetics, quality and durability levels not usually seen in Design-Build projects.

### ACHIEVING COMPLEX AND CONFLICTING GOALS

How then, does the entire Project Team adjust its approach to achieve these complex and conflicting goals? The solution initiates with the issuing agency and their staff of design professionals. While the usual design-build projects focus on engineering systems, mechanical and electrical as well as energy savings and LEED requirements, the Bridging Documents Team must enlist their staff of architects and interior designers to express minimum requirements for materials quality, finishes, interactive systems and even color selections as a basis of design. Often times an actual finish schedule can be issued in the bridging documents that can provide a level of intent as to the expectations of the finished aesthetic appearance.

A sound approach to solving the aesthetic expectation is the enhancement of Design Workshops for Architectural Layout and Interior Finishes. This would facilitate the proper transfer of information to the Design Team as to the expected end result. With the NCETR, the contracting agency allowed direct communication with the planned occupants of the building as well as the design staff of the using agency. This simple adjustment means a more expedient and accurate transfer of information between building administrators, users and the Design Team. Using the Design-Build Bridging Documents as a guide, the entire team can explore together the solutions to the challenges that fall within the framework of the contracted price structure. This solution requires intensive and accurate documentation of decision making by thorough meeting minutes and consensus conclusions.

### USING TECHNOLOGY TO BUILD CONSENSUS

The use of current technological tools to model and illustrate design decisions to a Design Workshop group proved extremely useful. Specifically, computerized illustrations provided workshop team members with exact finish and color renditions of interior design selections that could then be evaluated, debated and adjusted to move closer to the goal of consensus. Another innovative method to analyze and debate design decisions was computer generated "fly throughs" of the most important spaces. These techniques are important in achieving a common understanding of what is expected, in contrast with what is provided, with the goal of narrowing that gap to as close to zero as possible.

The inclusion of these efforts requires painstaking endeavors on the part of the end users, the contracting agency and the Design-Build A/E design team. While seemingly cumbersome, the cost-benefit to the contracting agency becomes apparent in the reduction of changes and revisions during the construction phase.

**TIME**

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