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T H E S O C I E T Y O F A M E R I C A N M I L I T A R Y E N G I N E E R S

Costs can be dramatically reduced by implementing a proactive program of military maintenance and adopting industry standards for cost-benefit analysis.

Improving **Military Facilities**

By William J. Faesenmeier and Russ Watson

The degraded condition of military installation facilities is common knowledge. Reports by both government and outside entities consistently say the condition of facilities is poor and funding to improve them is inadequate. Furthermore, determining what is meant by “adequate” is complicated by concepts such as readiness, restoration, upgrading, sustainment, maintainability and recapitalization. Up to now, studies have focused primarily on quantifying needs, and little has been done to overcome deficiencies, such as the repair backlog. This backlog has been reported by the Office of the Secretary of Defense to have increased from \$8.9 to \$14.6 billion during fiscal years 1992-1998.

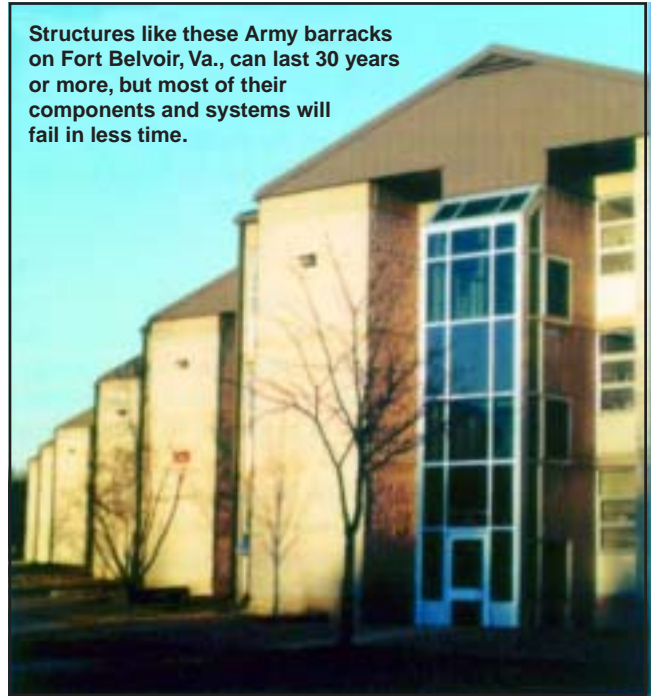
Buildings do not fail, building systems do. A building comprises numerous interrelated systems and components. Facility systems include the structure, roof, HVAC, plumbing, electrical, fire protection, windows, walls, flooring and pavement. Systems comprise components such as membranes, coatings, sealants, equipment and parts. Each system, component and sub-component has specific and discrete useful life expectancies.

Although structures can last beyond 30 years, few, if any, systems, components and sub-components do. During the life span of the building they need periodic maintenance, repair or replacement. Unfortunately, the decisions to do any of the three are usually reactive, rather than a function of an objective, programmatic, structured process that considers the value added by taking action or the penalty cost of deferring action.

Understanding the Problems

The federal government has funded studies to develop objective programs to determine the relative condition of assets, prepare budgets on a service-wide basis, and prioritize funding on a value-rating basis. The Air Force’s late-1980s “Operation Snapshot” program was tested and validated, but it subsequently died because its “champions” left their positions through reassignment or retirement. The Army’s mid-1990s “Fence-to-Fence” program was also tested and validated and ultimately suffered the same fate. Had these been implemented, they could have helped

Structures like these Army barracks on Fort Belvoir, Va., can last 30 years or more, but most of their components and systems will fail in less time.



to prevent today’s backlog of deteriorated government assets.

To complicate matters, a 1999 report of the General Accounting Office to the Senate Armed Services Committee on Military Infrastructure indicated that the services use different methods and criteria to assess property conditions, prioritize maintenance and repair needs, and allocate resources.

Each of the services thus “reinvents the wheel.” Underfunding has partially been the result of the lack of verifiable and defensible budget requests, despite the multitude of different programs and approaches. Without a common, objective methodology and process, current conditions, maintenance requirements and replacement needs cannot be compared across the combined services, and funding allocations will continue to be distributed without due con-

sideration for best value received for the dollars available.

By definition, facilities other than those that support or house operations are “not mission critical.” Therefore, they get but secondary consideration for funding allocations. Since there is never enough money to go around, the so-called non-critical facilities slip further down the deterioration curve, adding to the backlog. Spending decisions appear to be based on vague and subjective criteria at best. Little consideration is paid to functional importance, health and safety, cost to replace or repair, effect of other systems, habitability and quality of life. Given current funding principles and metrics, workplace facilities will always be low in priority.

Obstacles to Overcome

Long-term commitment to facilities is difficult because those charged with the stewardship of allocated funds and overall installation readiness have a very short-term exposure to risk. Installation command positions turn over every two to three years. There are no standards or requirements by which commanders are measured in relation to stewardship of their facility assets. Coupled with this, the cost to determine the base-line condition and implement a long-range program comes with a hefty price tag.

Assuming the Department of Defense has approximately one billion square feet of facilities, the cost to “objectively” quantify and record the condition of facility assets is in the range of 20 to 40 cents per square foot, or \$200 to \$400 million. Ongoing management fees for an inventory of this size would be in the range of 20 percent of the initial cost, or \$40 to \$80 million per year. While the initial and ongoing cost can appear high, the question that cannot be answered today is: “What is it costing the DOD and taxpayers to not have a system and methodology?”

Resolving the Issues

It is imperative that the Defense Department adopt the same cost-benefit and return-on-investment analysis processes that commercial organizations apply when requirements far exceed available funds. To improve facility management, the services must adopt consistent standards, measures and processes that will help to maximize the value of the dollars spent on facility asset maintenance, repair and replacement. These standards, measures and processes should be part of a strategic plan that is embraced throughout DOD.

The strategy should include:

- A single source of responsibility and accountability for DOD asset management, with clear responsibilities for the stewardship of the assets at service, command and installation levels.
- A common method to benchmark asset conditions and trends for facilities maintenance, repair and replacement needs.
- A single, objective methodology for data collection and condition rating of facilities, systems, and components across the DOD.
- An objective process for selecting projects to be funded, prioritizing projects for planning and budgeting purposes, and tracking the results of the budget allocations.

- A tool to prioritize projects and budgets on the basis of objective criteria and the relative value added.

Fixing the Problems

The DOD should adopt industry standards, such as those of the American Society for Testing and Materials (ASTM) for cost-to-benefit analysis for building maintenance and repair (ASTM E 917-99, E 964-98, and E 1121-98). These should be combined with an objective assessment process. The investment needed to implement such a program would be dwarfed by the pay-back.

DOD should also:

- Transfer responsibility for stewardship to a single, independent entity. This allows for long-term leadership, consistency, accountability and attainment of the program’s goals and objectives.
- Develop metrics for the stewardship of facility assets so that leaders at all levels understand their roles and responsibilities in relation to the program.
- Teach leaders the principles of asset management, and grade those in command on their care-taking responsibilities.
- Implement a single methodology for assessment and evaluation, including an objective, engineering-based rating system along with data-management tools to facilitate the program.
- Adopt a single, rational approach for budget allocation that considers not only mission criticality, but also health and life safety, functional importance, cost to repair or replace, the effect on other assets, habitability and quality of life.
- Require funding requests and plans be supported by “objective-based” business decisions.

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Conclusions

By adopting these recommendations, DOD will have a well-considered plan and the tools necessary to project future funding requirements based on objective data. This will enable the department to manage its facilities and infrastructure, and to overcome its backlog. At the same time, management will be held accountable to a standard of stewardship focused on long-term benefit. Such proactive facility asset management will improve the condition of DOD’s assets, increase their asset value, and maximize the value of DOD’s dollars.

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