



Highlights of [GAO-10-436](#), a report to the Subcommittee on Readiness, Committee on Armed Services, House of Representatives

## Why GAO Did This Study

To meet the challenges associated with a threefold increase in the Army's military construction program between fiscal years 2005 and 2009, the Army adopted numerous changes, including the expanded use of wood materials and modular building methods, designed to reduce building costs and timelines for new facilities. With the changes, the Army set goals to reduce building costs by 15 percent and timelines by 30 percent. The Army, Navy, and Air Force have also faced challenges associated with incorporating both antiterrorism construction standards and sustainable design ("green") goals into new facilities. GAO was asked to (1) assess the Army's progress in meeting its goals, (2) evaluate the merits from the Army's expanded use of wood materials and modular building methods, and (3) examine potential conflicts between antiterrorism construction standards and sustainable design goals. GAO reviewed relevant documentation, interviewed cognizant service officials, analyzed selected construction project data, and visited five Army installations to review facilities built with alternative materials and methods.

## What GAO Recommends

GAO recommends that the Department of Defense (DOD) determine the merits and long-term costs from the use of alternative building materials and methods and subsequently revise its military construction guidance, as deemed appropriate. DOD generally agreed with the recommendations.

[View GAO-10-436](#) or [key components](#). For more information, contact Brian Lepore, 202-512-4523 or [leporeb@gao.gov](mailto:leporeb@gao.gov).

## DEFENSE INFRASTRUCTURE

### DOD Needs to Determine and Use the Most Economical Building Materials and Methods When Acquiring New Permanent Facilities

#### What GAO Found

The Army set goals to reduce its estimated construction costs by 15 percent and building timelines by 30 percent, but it did not monitor goal achievement and thus did not know to what extent the goals had been met or whether changes made to its military construction program resulted in actual reductions in facility costs. GAO's review of selected project information showed that the Army did reduce the estimated cost of some facility construction projects and shortened building timelines during fiscal years 2007 through 2009, but it did not meet its overall stated goals. For example, GAO found that the average building timeline for one key measurement (design start to ready for occupancy) was reduced by about 11 percent—an improvement, but less than the 30 percent goal. The Army discontinued the numerical goals in fiscal year 2010, and Army officials stated that, although the specific goals might not have been achieved, they believed that the Army's efforts were successful in dampening the escalation of Army facilities' costs and would continue to help ensure cost-effective and timely facilities in future years.

The Army appears to have achieved some savings in selected construction projects by expanding the use of wood materials and modular construction methods for some of its facilities, but GAO found little quantitative data on whether the use of these materials and methods will result in savings over the long term compared to the traditional use of steel, concrete, and masonry materials and on-site building methods. Without long-term or life-cycle analyses that consider not only initial construction costs but also possible differences in facility service lives and annual operating and maintenance costs between the construction alternatives, it is not clear that the Army's expanded use of wood materials and modular building methods will achieve the Army's intended purpose of reduced facility costs over the long term. The Navy and the Air Force generally disagreed with the Army's view and believed that the use of wood materials and modular construction will result in facilities with shorter service lives and higher life-cycle costs. However, none of the services had the analyses to support its views. Without additional study and analysis, DOD will not know whether military construction program guidance needs to be changed to ensure that facilities are constructed with materials and methods that meet needs at the lowest cost over the long term.

Conflicts between antiterrorism building standards and sustainable design goals exist, but military service officials stated that the conflicts are considered to be manageable. GAO's review of 90 Army, Navy, and Air Force military construction projects, approved during fiscal years 2007 through 2009, showed that although incorporating the standards and the goals in new facilities added to construction costs, 80 of the projects required no special steps or workarounds to meet both the standards and the goals. However, service officials noted that achieving higher levels of sustainability in future construction projects while still meeting the antiterrorism standards would further increase initial facility costs and create additional design challenges.