



Testimony

Before the Subcommittee on the
Legislative Branch, Committee on
Appropriations, House of Representatives

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**CAPITOL VISITOR
CENTER**

**Update on Status of
Project's Schedule and Cost
as of April 17, 2007**

Statement of Terrell G. Dorn, Director,
Physical Infrastructure Issues

The Web version of this testimony was reposted on April 30, 2007, to reflect changes made to the text on the cover, and on pages 1 and 9.

See the list of changes on page 10 of this testimony.



Madam Chair and Members of the Subcommittee:

I appreciate the opportunity to be here today to assist the Subcommittee in monitoring progress on the Capitol Visitor Center (CVC) project. My remarks will focus on (1) the Architect of the Capitol's (AOC) construction progress since the last CVC hearing on March 13, 2007; and (2) the project's expected cost at completion and funding status.¹

Today's remarks are based on our review of schedules and financial reports for the CVC project and related records maintained by AOC and its construction management contractor, Gilbane Building Company; our observations on the progress of work at the CVC construction site; and our discussions with the CVC team (AOC and its major CVC contractors), AOC's Chief Fire Marshal, and representatives from the U.S. Capitol Police. We also reviewed AOC's construction management contractor's periodic schedule assessments, potential change order log, and weekly reports on the progress of interior wall and floor stonework. In addition, we reviewed the contract modifications made as of April 11, 2007.

At the last CVC hearing, we reported that our assessment of the project's schedule and expected cost at completion was somewhat constrained because the CVC team was still analyzing the impact on the project's schedule and cost of recently identified changes required for certain components of the fire protection and security systems. AOC completed its analysis of the schedule on April 10 and extended its estimate of the project's completion date by about 2 months, from March 2008 to June 2008. However, as of April 11, when we cut off our work to meet the congressional deadline for submitting written testimony, AOC's construction management contractor had not yet issued its analysis of the sequence 2 contractor's March 2007 schedule. With very little time to assess AOC's schedule analysis and without the construction management contractor's analysis of the project's March 2007 schedule, we could not thoroughly assess AOC's new scheduled project completion date or the project's estimated cost at completion. Thus, we are basing our remarks on the information available to us, and on our analysis of that information, as of April 11, 2007, recognizing that our views could change as more information becomes available.

¹GAO, *Capitol Visitor Center: Update on Status of Project's Schedule and Cost As of March 13, 2007*, GAO-07-601T (Washington, D.C.: Mar. 13, 2007).

Summary

Since the March 13, 2007, CVC hearing, the CVC team has continued to move the project's construction forward, but AOC has extended the project's scheduled completion date by about 2 months, to June 2008,² and further delays are possible. This delay was attributable to problems with activities on the project's critical path—the fire protection system.³ During the past month, the CVC team has made progress on the project's heating, ventilation, and air-conditioning (HVAC) system, interior wall stone and ceiling installation, and other interior and exterior construction work. AOC will be able to meet or come close to meeting its new scheduled project completion date only if the CVC team promptly makes significant improvements in its execution of the project and the project's schedule. To date, AOC's implementation of actions identified in its November 2006 action plan has not been completely effective in curtailing additional schedule slippages. Furthermore, ongoing communication and coordination breakdowns between the contractors and AOC's Chief Fire Marshal, as well as the large number of proposed change orders (over 450 as of February 2007), continue to present risks to the project's completion time frames and costs. For example, because of inadequate communication and coordination, some above-ceiling fire protection equipment has to be inspected, even though the ceilings are already in place, risking damage to ceilings and additional work if the inspections reveal deficiencies. Most of the new construction change order proposals that the project continues to generate each month are relatively small compared with the project's total cost; however, a subcontractor has expressed concerns about the cumulative effect of these proposals on subcontractors' cash flows and on the ability of subcontractors to complete their work on schedule.

As we reported at the last CVC hearing, we previously estimated that the total cost of the entire CVC project at completion would likely be about \$592 million without an allowance for risks and uncertainties, and over \$600 million with such an allowance. Because of the uncertainty over the project's expected completion date, we have not updated these estimates. To date, about \$538.4 million has been approved for obligation for CVC construction, including about \$7.4 million in fiscal year 2007

²This date does not allow time for installing artifacts in the exhibit gallery or preparing for operations.

³The critical path is the single longest path of activities through a project's schedule. Each day of delay in the critical path could delay the completion of the entire project. Near-critical paths are the next longest paths through the project's schedule.

appropriations. For fiscal year 2007, AOC has also received an additional appropriation of \$36.4 million for the CVC project, which AOC has not received approval to obligate. AOC has not indicated how much of the additional money is needed for construction or operations. AOC has also requested \$20 million in fiscal year 2008 CVC construction appropriations to cover remaining costs, and we estimate that AOC may need further appropriations in future fiscal years for construction changes and claims.

Construction Is Progressing, but Issues Related to the Fire Protection System Have Delayed the Project's Scheduled Completion by About 2 Months

According to AOC's construction management contractor, in dollar terms, the overall CVC project is 93 percent complete, compared with 91 percent reported complete at the March 13 CVC hearing. Eighteen of the CVC's 23 air handling units were reportedly operating full time as of April 11, and work has progressed in the East Front. As of April 11, AOC's Chief Fire Marshal had essentially approved the shop drawings for all but one of the CVC project's fire alarm system elements.

Schedule Slippage Has Continued, and AOC Faces Challenges in Meeting the New Project Schedule

The schedule for the CVC project's critical path activity—fire alarm and smoke control system—has slipped about 2 months since the Subcommittee's last CVC hearing, reportedly because several fire alarm system activities are taking longer than expected to complete. Additionally, the subcontractor responsible for installing the fire alarm system has indicated that because of contractual issues affecting its receipt of payments and delays in work that must be done by other subcontractors before it can complete its work, it may not be able to continue work at the scheduled pace.

According to two indicators of construction progress we have been tracking—the completion dates for certain work activities and the pace of wall stone installation—the project is not likely to be completed by June 2008 unless the actions AOC is taking to improve its schedule performance are more effective in stopping schedule slippages:

As shown in table 1, the sequence 2 contractor missed the completion dates for the majority of the work activities being tracked, although these dates have not been revised to be in line with AOC's latest schedule analysis. Specifically, the contractor completed 6 of 17 activities on time

and completed 3 other activities late. AOC said that it did not expect the contractor to meet many of the scheduled completion dates because, in AOC's view, many of these dates were no longer realistic. According to AOC, it has revised the completion dates for the activities to be tracked for future CVC hearings to be in line with its schedule analysis.

Table 1: Activities Being Tracked for the Capitol Visitor Center, March 13 through April 11, 2007

Activity	Location	Scheduled completion	Actual completion
Lobby paneling	Visitor Auditorium	3/13/2007	2/28/2007
Cabinets, buffet and servery	Food Service	3/15/2007	3/05/2007
Ceiling installation	Senate Upper Level	3/16/2007	3/19/2007
Riser cable installation	Life Safety	3/23/2007	4/4/2007
Wall stone area #1	East Front Principal	3/28/2007	3/23/2007
Floor stone	West Lobby & Assembly	3/28/2007	3/23/2007
Riser cable termination	Life Safety	3/30/2007	
Insulation testing cables	Life Safety	3/30/2007	4/4/2007
Install fabric ceiling panels	Exhibit Gallery	3/30/2007	
Plaster ceiling	East Front Ground	4/4/2007	
Testing and balancing AHU #2&17	Orientation Theaters	4/5/2007	3/07/2007
Check out wiring termination @ equipment	Life Safety	4/6/2007	
Testing and balancing AHU #10/11/22	Dining Room /Kitchen	4/6/2007	
Upholstered wall system	Visitor Auditorium	4/10/2007	
Testing and balancing AHU #13	Auditorium Visitor Lobby	4/10/2007	
Frame VP bulkheads	LOC Tunnel	4/11/2007	3/19/2007
Fabric ceiling panels	Orientation Lobby	4/11/2007	

Source: AOC and its construction management and sequence 2 contractors.

The project continues to experience delays in near-critical activities. Because AOC's construction management contractor had not yet issued its schedule analysis for March 2007, we did not have complete information on the sequence 2 contractor's performance in meeting scheduled completion dates for all of the project's near-critical activities during the month. However, information provided at the CVC team's weekly schedule meetings indicated that slippages continued to occur in a number of near-critical activities, including the CVC's HVAC system and East Front work.

Although AOC's extension of the project's scheduled completion date generally provides more time to complete the near-critical activities, significant additional delays in certain areas, such as ceiling installation, could delay the project's overall completion date if they slow work on the critical path, such as fire alarm device installation.

The pace of wall stone installation in the East Front has varied, first exceeding and then falling short of the expected average of 70 pieces of wall stone per day. For several weeks, the masons were installing an average of about 80 pieces of wall stone per day, but during the weeks of March 26 and April 2, they installed an average of 47 and about 55 pieces per day, respectively. The pace of installation slowed because the sequence 2 contractor has been installing steel to support the remaining wall stone. AOC expects the pace to pick up after the support steel is installed. Failure to maintain the stone installation schedule could further delay the installation of East Front fire alarm devices, since the ceilings that the devices hang from cannot be completed until the walls are installed.

Project Continues to Face Risks and Uncertainties

Problems in completing the installation, integration, operation, and testing of complex, major building systems, including the fire alarm, security, and HVAC systems, remain the most significant risk facing the project's schedule. Delays continue, and technical problems remain a risk until these systems have been installed, integrated, and successfully tested. Moreover, problems with these systems may not be evident until their final acceptance testing. In addition, significant delays have occurred because of breakdowns in communication and coordination between AOC's Chief Fire Marshal and the CVC team. This past month, for example, it was discovered that the sprinkler system was not inspected as required before some ceilings were closed in, even though the Chief Fire Marshal and the CVC team were meeting at least once a week. Although this breakdown may not affect the project's new June 2008 completion date, given the additional time AOC has included in the schedule for risks and uncertainties, some closed ceilings must be opened so that the sprinkler system can be inspected, and additional above-ceiling work may be needed if problems are found. Given the project's history, the risk of additional communication and coordination breakdowns between AOC's Chief Fire Marshal and the CVC team remains, and such breakdowns could affect the project's overall completion date.

As of April 11, 18 of the CVC's 23 air handling units were reportedly providing conditioned air to their designated spaces full time. The

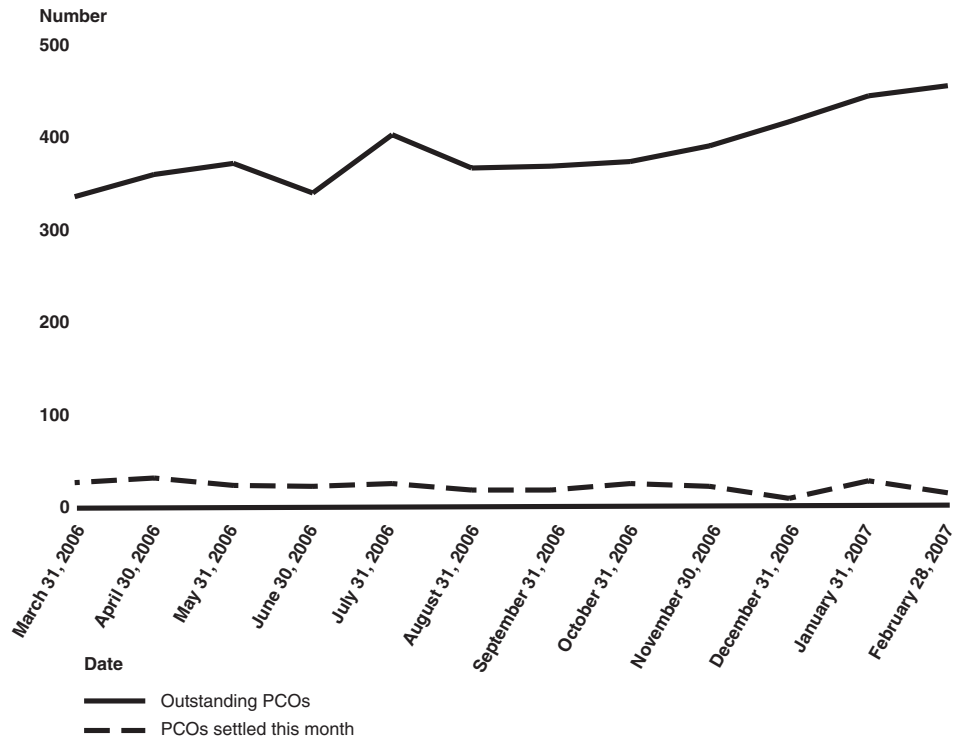
remaining 5 units were reportedly ready to operate as soon as the initial control programming could be installed, spaces for the units could be prepared or cleaned, and in some cases, other work could be completed. All 23 units still require some work, such as initial or final air flow testing and balancing, connection to the fire alarm system, punch-list work, and commissioning.⁴ The CVC team expects the HVAC system's commissioning to be completed by the fall of 2007, but some activities are taking longer than planned, and the achievability of this time frame is not certain. Risks include insufficient manpower, technical problems that could arise given the sophistication of the system (e.g., stair pressurization), coordination problems among subcontractors, equipment damage due to excessive dirt or moisture from a lack of air flow in some nonoperational units, and slippages in space readiness. Although 18 units were operating full time, the spaces being served by only 9 units were reported to be completely ready and clean as of April 11.

Another important risk, which we have consistently cited, is the number of proposed change orders during sequence 2, which has continued to grow even at this relatively late stage in the project. Proposed change orders that result in contract modifications for new work or rework could delay the project's scheduled completion, as well as increase the project's costs. Even though the dollar value of recent change proposals has been relatively small compared with the project's total cost, the unabated increase in the number of change proposals is cause for concern. As of February 2007, there were over 450 such proposals. Over the past 6 months AOC has settled an average of about 20 proposed change orders per month. At this rate, it would take almost 2 years, long after the project's construction is supposed to be complete, to settle all of the change proposals, even if no new change proposals were issued. Furthermore, completing the project before reaching agreement on all the change proposals could require contractors to complete some work before agreeing on a final price for the work or on all contractual terms. As a result, some subcontractors might experience cash flow problems that could affect their financial stability. In addition, a subcontractor's cash flow problems might delay progress on the project if the subcontractor was unable to provide the manpower needed to maintain the expected pace of construction. A major subcontractor responsible for installing the

⁴Commissioning is a systematic process to ensure, by verification and documentation, that all of a facility's systems perform interactively as designed and intended to meet the owner's operational needs.

fire alarm system recently expressed concerns to AOC about cash flow issues due to the large number of proposed change orders. Figure 1 illustrates the steady increase in proposed change orders, together with AOC's progress in settling them.

Figure 1: Proposed Change Orders Submitted for Sequence 2, March 2006 through February 2007



Source: AOC's construction management contractor.

Cost Estimate Remains Unchanged, but Additional Funds Have Been Provided and More Are Likely to Be Needed

Our estimate of the project's cost at completion remains the same as we reported at the last CVC hearing—\$592 million without provision for risks and uncertainties and over \$600 million with such provision. As we previously reported, the \$592 million estimate is rough, and we have not updated the \$600 million estimate to reflect our assessment of the cost impact of risks and uncertainties.

To date, about \$538.4 million has been approved for obligation for CVC construction, including about \$7.4 million in fiscal year 2007 appropriations. In fiscal year 2007, AOC has received an additional appropriated amount of \$36.4 million for the CVC project, which AOC has not yet received approval to obligate. AOC has not indicated how much of the additional money is needed for construction or operations. AOC has also requested \$20 million in fiscal year 2008 CVC construction appropriations to cover remaining costs. In addition to this requested

fiscal year 2008 funding, we estimate that AOC may need further appropriations in future fiscal years for construction changes and claims.

Madam Chair, this completes my prepared statement. I would be pleased to answer any questions that you or Members of the Subcommittee may have.

Contacts and Acknowledgments

For further information about this testimony, please contact Terrell Dorn at (202) 512-6923. Other key contributors to this testimony include Shirley Abel, Lindsay Bach, Maria Edelstein, Elizabeth Eisenstadt, Jeanette Franzel, Jackie Hamilton, Bradley James, David Merrill, Joshua Ormond, and Bernard Ungar.

The incorrect version of this testimony was posted to the Web and the following changes were made to the text:

1. On the Cover in the Addressee's Block, "Before Congressional Committees **was revised to read "Before the Subcommittee on the Legislative Branch, Committee on Appropriations, House of Representatives"**."
2. On page 1:
 - First line, "Madam Chair, Chairwoman, and Members of the Committees:" **was revised to read "Madam Chair and Members of the Subcommittee:"**.
 - First paragraph on line 1, "Committees" **was revised to read "Subcommittee"**.
 - Second paragraph, on line 10, "to date." **was revised to read "as of April 11, 2007."**
 - Third paragraph, on line 6 "last week and extended its estimate of the" **was revised to read "on April 10 and extended its estimate of the"**.
 - Third paragraph, on line 9 "Committees" **was revised to read "congressional"**.
3. On page 9 in the second paragraph, "Madam Chair and Chairwoman" **was revised to read "Madam Chair and Members of the Subcommittee"**.

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