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CAPITOL VISITOR CENTER

Update on Status of Project's Schedule and Cost as of March 13, 2007

Statement of Terrell G. Dorn, Director
Physical Infrastructure Issues



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 February 16, 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 stone installation. In addition, we reviewed the contract modifications made to date.

At the last CVC hearing, we reported that our assessment of the project's schedule and expected cost at completion was still somewhat constrained because the CVC team was 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. The impact of these changes on the project is still not fully known. Therefore, we could not thoroughly assess the project's schedule or estimated cost at completion and are basing our views on the information available as of March 6, 2007, recognizing our views could change as more information on the impact of these changes becomes available.

In Summary

Since the February 16, 2007, CVC hearing, the CVC team has continued to move the project's construction forward, but work in a number of important areas has been delayed. According to AOC's construction management contractor, there were no delays in the critical path last month, but all of the project's 17 near-critical paths lost time,² including 8

¹GAO, *Capitol Visitor Center: Update on Status of Project's Schedule and Cost As of February 16, 2007*, [GAO-07-507T](#) (Washington, D.C.: Feb, 16, 2007).

²The 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.

paths that lost a month or more. The CVC team has made progress on the project's heating, ventilation, and air-conditioning (HVAC) system; interior floor stone and ceiling installation; and other interior and exterior construction work. As noted at the last hearing, problems and uncertainty associated with the project's most critical activity—the fire protection system—are leading AOC to re-examine the project's schedule. AOC is considering adding time for further pretesting of major building systems, risks and uncertainties, and operations preparation. According to AOC, it anticipates that this additional time would likely move the dates for completing the CVC's construction to the spring of 2008 and for opening the CVC to the public to the summer of 2008. AOC expects to have more specific dates when it completes its schedule reassessment. In addition, problems with other important activities, including work on the East Front and the exhibit gallery, have not yet affected the project's completion date, but could do so in the future. The project also continues to face risks and uncertainties that could affect its progress, especially risks associated with the final testing of its major building systems, which is not scheduled to begin until July 2007, according to the project's most recent schedule, dated January 2007.

As we reported at the February CVC hearing, we roughly estimate that the total cost of the entire CVC project at completion is likely to be about \$592 million without an allowance for risks and uncertainties and over \$600 million with such an allowance. We have not updated our estimate of the project's cost at completion with an allowance for risks and uncertainties. To date, about \$538.4 million has been approved 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, and we estimate that AOC may need further appropriations in future fiscal years for construction changes and claims.

Construction Is Progressing, but Substantial Delays Have Occurred in Near-Critical Paths

According to AOC's construction management contractor, contractor billings indicated that the overall CVC project is now 91 percent complete, compared with 90 percent reported complete at the February 16 CVC hearing. Twelve of the CVC's 23 air-handling units were operating full time as of March 1; about 84 percent of interior floor stone has reportedly been installed; and work has progressed in the East Front. In addition, AOC's Chief Fire Marshal has essentially approved all shop drawings³ submitted for the fire protection system except those for a special fire suppression system for the exhibit gallery. In addition, the fire marshal expects to complete his review of the contractor's final plan for the fire alarm system's acceptance testing by mid-April.

All Near-Critical Paths Have Been Delayed

The construction management contractor maintains that there have been no delays in the critical path shown in the January 2007 schedule. However, delays have occurred in all 17 near-critical paths, and further delays in some of these paths could affect the project's completion date. Work on 8 near-critical paths fell at least 4 weeks further behind in January. For example, according to the construction management contractor, the schedules for the East Front principal level and for the exhibit gallery's fire protection system slipped by 9 weeks and 5 weeks, respectively, between the December 2006 and the January 2007 schedules.

Because of the delays in the fire alarm system work and in several near-critical paths, AOC has extended the scheduled construction completion date for the House and Senate expansion spaces. For the expansion spaces, the schedule slipped by 8 days—from July 27 to August 9, 2007—according to the January 2007 schedule. The near-critical paths include millwork, bronze doors, and above-ceiling work. Of even greater concern, the dates shown in the January 2007 schedule for completing six near-critical paths were within 20 workdays of the critical path, meaning that additional delays of 12 to 20 workdays or more in these paths could delay the overall completion of the expansion spaces. Furthermore, the expansion space subcontractor has said that it has not yet determined whether scope changes requested by the government will affect the scheduled construction completion date.

³Shop drawings are submittals required by the contract that provide detailed information on work that is to be done.

Barring further construction delays, the House and Senate expansion spaces will be completed before the CVC's construction, but both the CVC and the expansion spaces will be available for occupancy at the same time, because AOC is planning to test the fire protection and other major building systems in both facilities concurrently.

Indicators of Construction Progress Are Mixed

The indicators of construction progress that we have been tracking continue to suggest that, despite some progress, the project's construction is not likely to be completed on December 21, 2007, as shown in the project's January 2007 schedule, unless the actions AOC is taking to improve the CVC team's schedule performance are effective in stopping slippages. First, as shown in table 1, the sequence 2 contractor⁴ completed 8 of 9 milestones⁵ scheduled for completion by March 7, 2007, the date of our analysis. Six of these milestones were completed on time. While the number of completed milestones is greater this month than last,⁶ our analysis for this month is based on a new baseline established for the February schedule. Had we used the same baseline we used for the previous hearing, all but 1 of the milestones would have been completed late. AOC changed the baseline because it recognized that the older schedule was unrealistic, and we agree that a change in the baseline was necessary.

⁴AOC decided to implement the CVC construction project in two phases, or sequences. The sequence 1 contract, for excavation and structural work, was awarded to Centex Construction Company, and the sequence 2 contract, for mechanical, electrical, plumbing and interior finishing work, was awarded to Manhattan Construction Company. In addition, AOC, which has overall responsibility for managing the CVC project, has been receiving construction management services from Gilbane Building Company. These services include coordinating the activities of the major construction contractors, monitoring worker safety, and providing AOC with status information for reporting to Congress. See *Capitol Visitor Center: Priority Attention Needed to Manage Schedules and Contracts*, GAO-05-714T (Washington, D.C.: May 17, 2005).

⁵The table also includes a tenth milestone, scheduled for completion by March 9, 2007, but as of March 7, AOC did not expect this work to be completed by that date.

⁶As we reported at the February hearing, the contractor completed 4 of 21 milestones scheduled for completion by December 30, 2006—2 milestones on time and 2 late.

Table 1: Sequence 2 Contractor's Progress in Meeting Selected Milestones Scheduled for Completion by March 13, 2007

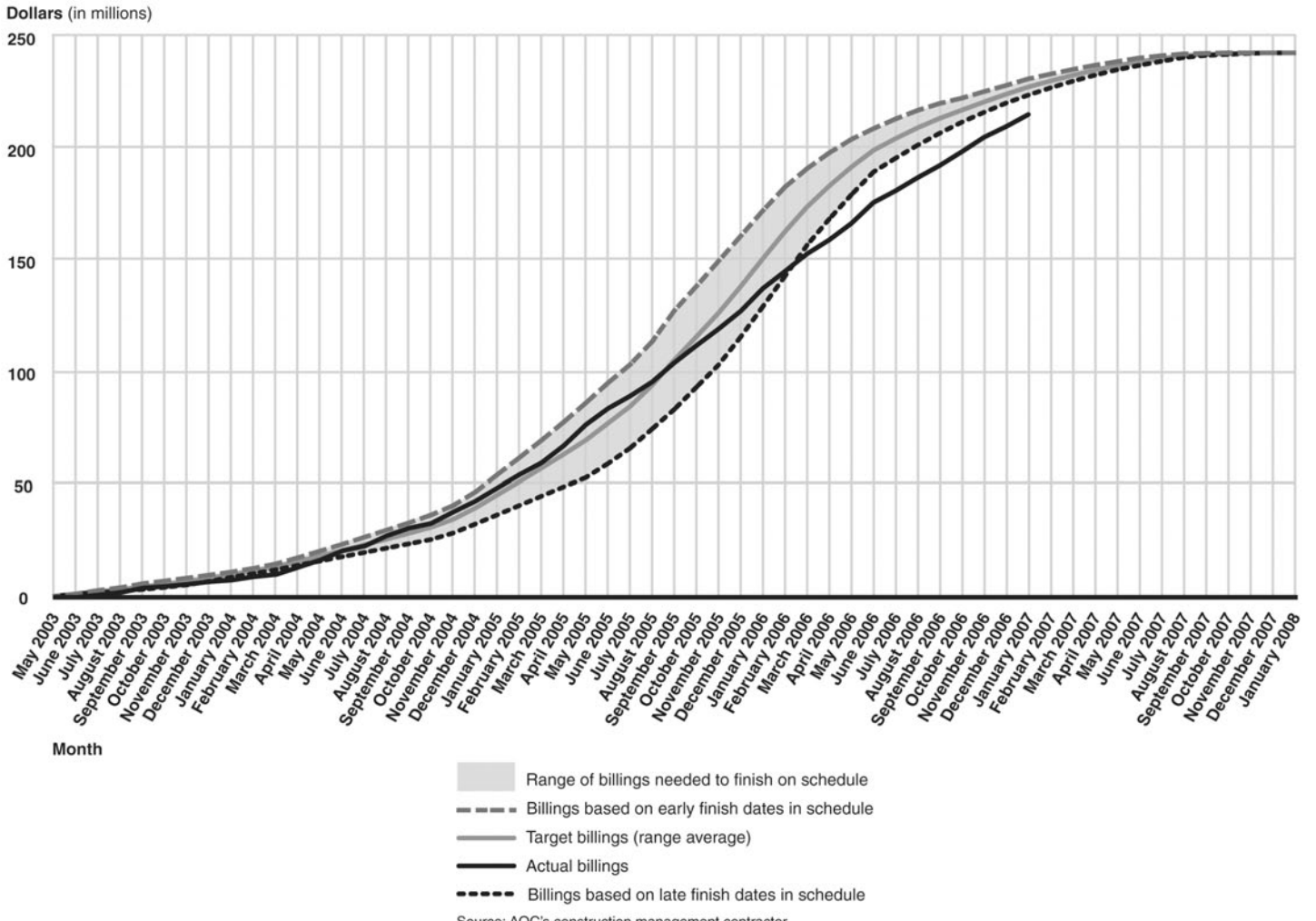
Activity	Location	Scheduled completion	Actual completion
Set escalator 35 truss	West Lobby and Assembly	02/12/2007	02/20/2007
Set escalator 34 truss	West Lobby and Assembly	02/16/2007	02/16/2007
Install glass floor, north end 1/3	Exhibit Gallery	02/28/2007	02/19/2007
Servery area stone tile	Food Service	02/28/2007	02/28/2007
Carpet	Food Service	02/28/2007	03/01/2007
Finish drywall bulkheads	Orientation Lobby	02/28/2007	02/15/2007
Foot grilles	Great Hall	03/05/2007	02/26/2007
Ceiling installation	House Service Level	03/07/2007	^a
Install glass wall north end 2/3	Exhibit Gallery	03/09/2007	02/27/2007
Complete testing and balancing	Great Hall	03/09/2007	^a

Source: AOC for the scheduled completion dates and AOC and its construction management contractor for the actual completion dates as of March 7, 2007.

^aAs of March 7, 2007, AOC did not expect this work to be completed on time.

Second, as figure 1 shows, the sequence 2 contractor's monthly billings through January 2007 continue to indicate that construction work is about 2 months behind the scheduled completion date. Because the line for actual billings falls below the line for billings based on the late finish dates in the schedule, the work is likely to be completed later than scheduled.

Figure 1: Total Billings by the Sequence 2 Contractor for the Entire CVC Project Compared with the Billings Needed to Finish Construction Work on Schedule



Notes:

The early and late lines on this figure reflect the cumulative billings that would be required to complete the project through contract modification number 160 (\$242.4 million total contact value) by the early and late finish dates shown in the sequence 2 contractor's schedule.

The actual line reflects the sequence 2 contractor's actual monthly billings.

Although bills are typically submitted for payment after work is completed, it is often likely that construction work will be completed on schedule when the actual billing line falls between the early and the late lines in the figure. Even with the lag in billings, this figure indicates that the amount of work being completed and billed each month is not sufficient to keep the project on schedule.

Other indicators of construction progress that we have been tracking, such as the number of proposed change orders, also point to further delays. The number of proposed change orders has continued to grow during sequence 2 work, even at this relatively late stage in the project. Proposed change orders that result in contract modifications for new work or rework could adversely affect the schedule, as well as the costs, of the project.

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. Technical problems may not be evident until these systems undergo testing and commissioning.⁷ According to the January 2007 schedule, the HVAC system's commissioning is not planned to be completed until July 2007, and in the interim, much work remains. As of March 1, 12 of the CVC's 23 air-handling units were providing conditioned air to their designated spaces full time. The remaining 11 units were reportedly ready to operate as soon as the initial control programming could be installed, spaces for the units could be prepared and cleaned, and in some cases, other work could be completed. All 23 units still require air flow testing and balancing, control-related work, connection to the fire alarm system, punch-list work, and commissioning.⁸ While the CVC team expects the commissioning of the entire HVAC system to be completed in July, the achievability of this date is uncertain. We continue to believe that AOC needs to ensure that all of the remaining work and testing related to the CVC's major building systems is well coordinated, as we discussed at the Subcommittee's February CVC hearing.

While work on the fire alarm system has advanced, it still requires substantial acceptance testing, as well as testing to ensure that it and the other major building systems operate together as intended. In addition, the project's schedule remains vulnerable to other risks and uncertainties, including design or scope changes, late identification or slow resolution of

⁷Final acceptance testing is the last test of a system's operation, conducted to ensure that the system meets all contract specifications and relevant fire and life safety code requirements and operates as intended.

⁸Commissioning 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.

problems, and insufficient manpower. AOC is currently reassessing the schedule and considering adding more time for such items as further pretesting of major building systems, risks and uncertainties, and operations preparation. According to AOC, it anticipates that this additional time would likely move the CVC's completion date to the spring of 2008 and the CVC's date for opening to the public to the summer of 2008. AOC expects to have more specific dates when it completes its schedule reassessment.

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 have reported since the November 15 CVC hearing—\$592 million without provision for risks and uncertainties and over \$600 million with such provision. As we reported at the November hearing, 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 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, Maria Edelstein, Elizabeth Eisenstadt, Jeanette Franzel, Jackie Hamilton, Bradley James, Kelly Slade, and Bernard Ungar.

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