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CAPITOL VISITOR CENTER

Update on Schedule and Cost

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Physical Infrastructure Issues



Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to assist the Subcommittee in monitoring progress on the Capitol Visitor Center (CVC) project. Our remarks will focus on (1) the status of the project schedule since the Subcommittee's October 18, 2005, hearing¹ on the project, (2) the project's costs and funding, and (3) worker safety issues. We will discuss the progress made and problems encountered in completing scheduled construction work and in continuing to develop the project schedule, as we indicated during the Subcommittee's October 18 hearing; however, we will not be able to estimate specific completion dates until the project schedule is stable and AOC and its construction management contractor—Gilbane Building Company—have completed their assessments of the schedule and we have had an opportunity to evaluate them. Also, we will update the information we previously provided on the project's costs and funding, using readily available data, but we will wait until the project schedule is stable and has been fully reviewed before we comprehensively update our November 2004 estimate of the cost to complete the project and update the provision in our estimate for risks and uncertainties facing the project.

Our remarks today are based on our review of schedules, financial reports, and worker safety information for the CVC project and related records and reports developed or maintained by AOC and its construction management contractor; our review of AOC's consultant's—McDonough Bolyard Peck (MBP)—November 1, 2005, report updating its October 2004 estimate of the cost to complete the project; our observations on the progress of work at the CVC construction site; and our discussions with CVC project staff (including AOC and its major CVC contractors), AOC's Chief Fire Marshal, U.S. Capitol Police representatives, and officials responsible for managing the Capitol Power Plant (CPP). We did not perform an audit; rather, we performed our work to assist Congress in conducting its oversight activities.

In summary, construction work in several areas has moved forward since the Subcommittee's October 18 CVC hearing, but additional delays have occurred, and AOC's construction management contractor has identified

¹See GAO, *Capitol Visitor Center: Status of Schedule, Fire Protection, Cost, and Related Issues*, [GAO-06-180T](#) (Washington, D.C.: Oct. 18, 2005).

several concerns with the schedule that raise questions about its proposed mid-December 2006 opening of the base CVC project to the public.²

- Construction work has continued on all interior CVC levels, various sections of the House and Senate expansion spaces, the plaza, and the House connector and utility tunnels. Overall, however, the work, especially stonework, has taken longer than scheduled. For example, the installation of interior wall stone fell behind about 2 weeks because of delays in receiving needed stone. Work on the utility tunnel was delayed by a similar amount of time for a variety of reasons.
- Efforts by the sequence 2 contractor to resequence activities involved in testing, balancing, and commissioning the heating, ventilation, and air-conditioning (HVAC) system had the net effect of moving the base project's completion date forward 3 days. AOC's construction management contractor has accepted this resequencing. However, other scheduling issues could delay completion. For example, AOC's Fire Marshal Division has raised several concerns about the schedule for testing and inspecting the CVC's fire protection system, and the construction management contractor has identified a number of critical activities whose completion dates slipped from the September to the October schedule. Delays in completing these critical activities affect the progress of the project because other work cannot continue until they are completed. Critical stonework activities pose particular concerns, given the problems with labor and supplies that the project has experienced. For example, in October, the sequence 2 contractor received less than 20 percent of the stone expected.
- AOC's construction management contractor's evaluation of the duration of selected activities, completed last week, points to a later completion date than is currently scheduled unless additional actions are taken. This evaluation identified unrealistic durations for the selected activities (especially stonework), concerns about the schedule's logic, and

²AOC set September 15, 2006, as the contractual date for completing the base project's construction and for opening the CVC facility to the public. The House and Senate expansion spaces were scheduled to be completed after that date. AOC set the September contract completion date in November 2004, when it reached agreement with the contractor on a new date for starting sequence 2 that reflected the delays experienced on sequence 1. On September 6, 2005, AOC informed Capitol Preservation Commission representatives that it still expected the base project's construction to be substantially complete on September 15, 2006, but was postponing the date for opening the facility to the public to December 15, 2006, so that it could complete system tests, minor punch-list work, and preparations for operations.

inaccuracies in reflecting the impact of delays and sequence 2 contract changes to date. The construction management contractor made a number of recommendations based on its findings. The contractor's evaluation has reinforced our view that the base project would be difficult to complete in 2006 and is more likely to be completed in early to mid-2007 unless AOC and its contractors take extraordinary action or change the project's scope, which could increase the government's costs. Our belief is based on the project's history of delays; the views of project personnel that several activities (such as the installation of interior wall stone) are likely to take longer than scheduled; the large number of critical activities in the current project schedule; and the risks and uncertainties that continue to face the project.

AOC and its construction management contractor expect to resolve outstanding scheduling concerns and issues by the end of this year. When AOC and its construction management contractor have prepared what they consider to be a reasonably stable project schedule, we will reevaluate the schedule and inform the Subcommittee of our results. In the interim, to help ensure that Congress has better information for making CVC-related decisions, we are recommending that AOC (1) implement the recommendations for obtaining a more reliable project schedule contained in its construction management contractor's November 2005 report, which are consistent with our previous recommendations on schedule management, and (2) reassess its proposed December 2006 date for opening the CVC to the public when it has a more reliable construction schedule.

Our preliminary work indicates that the entire CVC project is likely, at a minimum, to cost \$542.9 million. This preliminary estimate falls about midway between our September 15, 2005, interim estimate of \$525.6 million, which did not provide for risks and uncertainties, and our November 2004 estimate of about \$559 million, which did provide for risks and uncertainties. Specifically, this current \$542.9 preliminary estimate is about \$17.3 million more than the September 15 interim estimate and about \$16.1 million less than the November 2004 estimate. The current \$542.9 million preliminary estimate does not provide for risks and uncertainties or for additional payments to contractors to cover the costs of certain delays and other contingencies. Even without providing for risks and uncertainties, though, we have increased our cost estimate since September 15 because additional and more expensive changes to the project have been identified; we have increased our allowance for contingencies; and we have added funding for AOC and contractor staff that we believe are likely to be working on the project through the spring

of 2007. Our preliminary estimate substantially exceeds MBP's November 2005 updated estimate of \$481.9 million, largely because MBP's estimate does not cover a number of project components and does not, in our view, provide adequately for contingencies. In total, the funds specifically provided for project construction to date—about \$528.4 million—are \$14.5 million less than our preliminary \$542.9 million cost estimate. In addition, another \$7.7 million has been provided to cover either CVC construction or operations, although at this time AOC does not plan to use any of these funds for construction. Congress has limited the amount of federal funds that can be used for the construction of the tunnel connecting the CVC with the Library of Congress to \$10 million.³ As of October 31, 2005, AOC estimated that the tunnel would cost about \$8.8 million to construct; however, AOC had not yet awarded the contract for certain modifications to the tunnel project. Nevertheless, AOC believes that it will be able to keep the tunnel's construction cost below the congressional limitation, and both we and AOC plan to monitor the tunnel's construction cost closely.

According to our analysis of CVC data, worker safety rates have improved substantially this year, although the lost-time rate remains above industry norms. The injury and illness rate for the first 10 months of 2005 declined 52 percent from the rate for 2004, putting the CVC site's rate 3 percent below the average for comparable construction sites. The lost-time rate decreased 62 percent during the same period, but the CVC site's rate is still 29 percent higher than the average rate for comparable construction sites. AOC and its contractors have taken a number of actions during 2005 to improve safety performance on the project, such as conducting training to elevate safety awareness and placing safety posters around the worksite. In addition, senior managers are meeting periodically to develop strategies to improve safety. Poor housekeeping, however, has been an ongoing issue at the site, and the sequence 2 contractor has recently taken actions to address this issue.

³Public Law 108-83, 117 Stat. 1007, 1026 (Sept. 30, 2003).

Work and Revisions to the Project Schedule Continue, but Delays Hamper Progress

Work in several areas has moved forward since the Subcommittee's October 18 CVC hearing, but additional delays have occurred, and AOC's construction management contractor has identified several concerns about the project schedule. AOC has been addressing previously identified schedule-related problems.

AOC Continues to Project a Mid-December 2006 Opening for the Base CVC Project

According to the October 2005 schedule prepared by AOC's sequence 2 construction management contractor, the base CVC project can open to the public in December 2006, and the House and Senate expansion spaces will be finished by the end of February 2007. The contractor's October schedule indicates that, with some exceptions, construction work on the base CVC project will be essentially complete by September 15, 2006, and the remaining work will be completed by December 8, 2006. This remaining work includes testing, balancing, and commissioning the HVAC system; testing and inspecting the fire protection system; completing punch-list items; and preparing for operations. For the East Front, the October schedule shows construction work, such as the roof restoration, finish work, and elevator/escalator installation, completed after September 15, 2006. The October schedule also shows other construction work, such as the installation of ceiling panels in the orientation lobby and painting in the atria, extending after September 15, 2006. AOC expects all this construction work to be done and the base CVC project to be ready for operations between September 15, 2006, and mid-December 2006, enabling the facility to open to the public in mid-December. Additionally, under the October project schedule, the House and Senate expansion spaces will be completed in December 2006, and the testing, balancing, and commissioning of the HVAC system and the testing of the fire protection system will be finished by February 26, 2007. According to AOC's sequence 2 and construction management contractors, it is not yet clear whether the expansion space construction work will have progressed far enough to omit the temporary fire safety measures once considered necessary to open the CVC to the public. They said they are still analyzing the work associated with the areas where the base project and the expansion spaces come together to determine whether and how the need for temporary fire safety measures can be minimized or eliminated.

Construction Work Continued, but Problems with Stonework and Other Issues Caused Delays

Since the Subcommittee's October 18 CVC hearing, construction work has continued on the CVC, the East Front, the plaza, the House and Senate expansion spaces, and the House connector and utility tunnels. For example, the installation of wall stone has continued in the auditorium, the

orientation theaters, and the upper west lobby. Mechanical, electrical, and plumbing work has also been proceeding in the CVC.

Overall, however, construction work, especially stonework, has taken longer than scheduled. Between the Subcommittee's October 18 hearing and November 10, the sequence 2 contractor completed 8 of the 16 activities that we and AOC have been tracking for the Subcommittee, but only 3 of these activities were completed by the target dates shown in the contractor's September 2005 schedule. (See app. I.) Delays have also occurred in interior stonework and in work on the East Front, the utility tunnel, and the penthouse's mechanical systems. For example, according to AOC's construction management contractor, similar to what happened in September, the sequence 2 contractor lost about 10 out of 21 possible workdays, both on critical interior stonework and on the utility tunnel. According to the construction management contractor, the stonework was delayed by the slow and late delivery of stone, a lack of critical pieces of stone, the need to address problems arising from sequence 1 work, and a shortage of stone masons. During October, the installation of wall stone in the great hall and exhibit gallery was especially impeded because the stone supplier failed to meet scheduled delivery dates and the sequence 2 contractor received less than 20 percent of the stone the supplier had agreed to provide. Moreover, according to the sequence 2 contractor, during several preceding months, deliveries of stone were only about half as large as expected. Additionally, the contractor said, the delivered stone was not in the appropriate sequence and did not cover complete areas. To help mitigate these problems, during October, the sequence 2 contractor transferred stone masons from areas such as the exhibit gallery, for which no wall stone was available, to the auditorium, for which wall stone was available.

AOC's construction management contractor cited other delays in October, especially in the utility tunnel and in the exhibit gallery. For instance, work on First Street for the utility tunnel was delayed by unforeseen site conditions, rain, and the need to do unanticipated work. However, the construction management contractor said that steps have been taken to mitigate the impact of the delays, including the sequence 2 contractor's hiring of another subcontractor and the installation of piping in the tunnel. In the view of the construction management contractor and the sequence 2 contractor, these steps will enable the CVC's air-handling units to start up in February 2006 rather than in March 2006, as indicated in the October schedule. In the exhibit gallery, besides the delay in wall stone installation, the construction management contractor identified several problems, including delays in drawings for marble and finishes and concerns about

the acceptability of the gallery's fire suppression system, that could further delay work in the exhibit gallery.

Schedule Revisions Saved Some Time, but Many Activities Are Highly Vulnerable to Delay

The sequence 2 contractor resequenced activities involved in testing, balancing, and commissioning the HVAC system and made other schedule changes that had the net effect of moving the base project's completion date forward 3 days. While the resequencing will result in a loss of 10 workdays for the HVAC activities, according to the contractor's revised schedule, the other changes have advanced the base project's scheduled completion date to December 8, 2006, rather than December 11, 2006, as indicated in the September schedule. AOC's construction management contractor reports that it, the sequence 2 contractor, and AOC's commissioning contractor have generally agreed on the revised schedule for testing, balancing, and commissioning the HVAC system. However, AOC's Fire Marshal Division has not yet agreed on the schedule for those activities that relate to the CVC's fire protection system, such as testing and inspecting the smoke control system, the fire alarm system, and stair pressurization. On October 31, the division provided its comments on the revised schedule for the fire protection system. The division's Deputy Fire Marshal expressed several significant concerns about the schedule. AOC and its construction management contractor expect to complete their reviews of this part of the schedule and resolve the Fire Marshal Division's concerns by December 31, 2005.

The construction management contractor has identified 14 critical activity paths in the October schedule that will extend the base project's completion date beyond AOC's September 15, 2006, target date if expected lost time cannot be recovered or further delays cannot be prevented. Eleven of the 14 critical activity paths in the October schedule were also identified in the September schedule. For 4 of these 11 paths, such as the auditorium wall stone installation and the orientation theater millwork, the completion dates showed improvement compared with the September schedule, but for the other 7 paths, such as the utility tunnel and the exhibit gallery stonework, the completion dates slipped. The 3 paths newly identified in October are elevator installation, exhibit gallery steel framing, and 10- and 12-inch water line installation,⁴ each of which could delay the project if expected lost time cannot be recovered. In addition, our analysis

⁴The construction management contractor identified the water lines as an issue in September but did not list them as critical until October.

of productivity data for interior wall stone installation, coupled with the sequence 2 contractor's analysis of stone deliveries, indicates that AOC is not likely to meet its September 15, 2006, target date for completing the base project's construction without significant increases in the pace of wall stone deliveries and installation. That is, without more stone masons and/or more work hours, more stone delivered more quickly, and faster stone installation, AOC is unlikely to meet its target schedule. The sequence 2 contractor believes that stone masons will be able to install more wall stone per day in some areas, such as the exhibit gallery, because the work is not as difficult as in the great hall or orientation theaters. However, the pace of this installation remains uncertain, in our view. Furthermore, given the project's experiences to date with the number of stone masons, the quantity of stone deliveries, and the pace of installation, AOC's construction management contractor notes that the completion of wall stone installation could extend up to several months beyond the July 2006 date shown in the project schedule without more work hours, higher productivity, and sufficient stone. The pace of wall stone installation is especially important because it affects the timing of other critical work necessary for the project's completion, such as the ceiling's installation and the HVAC system's testing, balancing, and commissioning. The stone supply problem is the subject of litigation between the sequence 2 contractor and its subcontractors, and the sequence 2 contractor has been working to resolve the problem. However, at this time, it is not clear how or when this issue will be resolved.

Construction Management Contractor's Evaluation and Our Analysis Point to a Later Completion Date

Most of the activities we have been discussing, such as the wall stone installation, fire safety inspections, and House connector tunnel construction, are among the activities that we previously identified as likely having optimistic durations, suggesting that those activities could take longer to complete than shown in the project schedule. These activities served as the basis for our September 15 recommendation that AOC rigorously evaluate the durations for the activities shown in the project schedule. Last week, AOC's construction management contractor finished evaluating these durations and the logic for what it considered the most critical activities, such as wall stone installation, and discussed the impact of delays and sequence 2 contract changes on the project schedule. In its November 9 report to AOC, the construction management contractor said that (1) it was generally difficult to identify any activities that were completed within the planned duration; (2) none of the activities underway, primarily stonework, can be projected to be completed within the planned duration unless additional resources are applied; (3) the durations for a number of activities exceed 40 days compared with the

contractual limit of 20 days; and (4) the sequence 2 contractor's resequencing of work to mitigate the impact of delays will result in a "stacking of trades,"⁵ which will require more manpower. Moreover, although the sequence 2 contractor has said that the project schedule reflects the impact of contract modifications executed to date and delays, the construction management contractor noted that the schedule does not accurately reflect the impact of contract changes and of delays due to the schedule's logic and raised concern about whether the schedule fully reflected the impact of changes and delays given their magnitude.

The construction management contractor made several recommendations to AOC based on its findings. For example, the construction management contractor recommended the development of a revised schedule that reflects (1) enhanced logic and sequencing of work, (2) activity durations more in line with the contract's 20-day maximum requirement, and (3) the impact of all delays and contract changes encountered to date and the use of available resources. The construction management contractor also recommended the development of a recovery schedule for each recognized delay, an analysis of the impact of the recovery activities on required resources, and an examination of the amount of time required to prepare for operations between completing construction and opening to the public. The construction management contractor's findings and recommendations concerning the project schedule are generally consistent with ours.⁶

Although the sequence 2 contractor has taken, plans to take, and is considering various actions to recover lost time and prevent or mitigate further delays, we continue to believe that the contractor will have difficulty completing construction before early to mid-2007. Among our reasons for concern are the uncertainty associated with the fire protection system schedule, including the concerns expressed by AOC's Fire Marshal Division and our earlier work that raised questions about the amount of time being provided for system testing and inspections; the schedule slippages to date; the optimistic durations for a number of activities based

⁵This situation can occur when workers from different trades, such as stone masons, electricians, plumbers, or plasterers, have to work in the same area at the same time to meet a schedule, sometimes making it difficult to ensure sufficient space and resources for concurrent work.

⁶On November 14, 2005, AOC provided us with MBP's draft report on MBP's assessment of the schedule durations for 19 activities. We did not, however, have sufficient time to evaluate the report for discussion in this statement.

on the views of CVC team members and the results of the construction management contractor's recently completed review; the large number of activity paths that are critical; and the risks and uncertainties that continue to face the project. In addition, the continued schedule slippages indicate that more and more work will have to be done in a diminishing amount of time, and we are concerned—as is the construction management contractor—that the project schedule may not reflect the impact of changes to sequence 2 work resulting from contract modifications. Many changes, some substantial, have been made to the sequence 2 contract since it was initially awarded in April 2003. Yet, according to the construction management contractor, none of the modifications that have added work to the sequence 2 contract or changed the facility's design have been reflected in the project schedule. Moreover, as AOC's construction management contractor has noted, several problems have developed with activities associated with the exhibit gallery, and delays in completing CVC ceiling work necessary for the HVAC and fire protection systems could be problematic, although the CVC team is considering ways to mitigate these risks. We also note that the Chief Fire Marshal has not yet approved the construction drawings for the fire protection system or the schedule for the system's commissioning and testing.

AOC Has Been Addressing Previously Identified Schedule-Related Issues

AOC and its construction management contractor have been working to implement recommendations we have made to improve AOC's schedule management and to address other schedule-related issues we have identified.

- We have recommended for some time that AOC improve its schedule management and analyze and document delays and the reasons and responsibilities for them on an ongoing basis—at least monthly. In an October 20, 2005, letter, AOC asked its construction management contractor to implement this recommendation. The construction management contractor has begun to establish a process for doing so and plans to have it operational by December 31.
- We have also recommended that the project schedule show the resources to be applied to meet the schedule dates. While the sequence 2 contractor has shown proposed resource levels for many activities, it has not done so for many of the new activities added to the project schedule. The lack of such information can complicate the analysis of delays, including their causes and costs. AOC's construction management contractor has expressed particular concern about the resources for the stone and

finishing work and has requested additional resource information from the sequence 2 contractor for these activities.

- We have further recommended that AOC develop plans to mitigate risks and uncertainties facing the project. In July 2005, AOC asked one of its consultants—MBP—to assist it in identifying risks and developing plans to address those risks. As of November 1, AOC had identified 55 risks facing the project and had begun to develop and implement plans for managing these risks. As of November 1, AOC said that it had developed mitigation plans in varying levels of detail for about 30 risks and has been discussing or plans to discuss the remaining risks at a weekly meeting. AOC also said that it plans to add new risks to its list and develop mitigation plans for other risks as appropriate.
- In our October 18 testimony, we noted several problems associated with the CPP that could adversely affect the CVC, as well as other congressional buildings, if they are not corrected or addressed. For example, potential delays in completing the West Refrigeration Plant Expansion project and storm damage to electrical equipment that has precluded the use of an East Refrigeration Plant chiller could limit the ability of the CPP to provide enough steam and chilled water for the CVC's air handlers to begin operating in March 2006, as shown in the October 2005 schedule. Staffing and training issues associated with operating the new equipment and a vacant CPP director position also pose management concerns. Work on the West Refrigeration Plant Expansion project could be delayed because AOC has directed the contractor to proceed with two significant contract modifications since the Subcommittee's October 18 CVC hearing. Specifically, the contractor is authorized to (1) reconfigure piping so that the existing West Refrigeration Plant can be operated independently of the West Refrigeration Plant Expansion to enhance the CPP's chilled water production capability and (2) change the design of the control system that will serve both the West Refrigeration Plant and new West Refrigeration Plant Expansion. These changes could affect the March 2006 completion date for the expansion project; however, AOC believes it will have sufficient chilled water capacity for the CVC even if the expansion project's completion is delayed. Furthermore, AOC plans to restore power to the chiller in the East Plant by realigning existing equipment and is still determining why the electrical equipment (e.g., aging equipment, inadequate maintenance) was vulnerable to storm damage. Finally, the period for applying for the plant's vacant director's position closed on November 4. According to AOC, it received 26 applications and expects to fill the position in December. As part of a separate review for this Subcommittee, we are continuing to assess certain CPP issues, such as the staffing and training for, and the estimated cost to complete, the

West Refrigeration Plant Expansion project.

- In our October testimony, we identified problems with coordination between the CVC project team and AOC's Fire Marshal Division. To address these problems, AOC and its construction management contractor have established a process for the team and the division to arrange for and document CVC inspections.

Recommendations for Executive Action

To help ensure that Congress receives a more reliable estimate of the project's completion date in order to plan for the CVC's opening to the public and make more informed decisions about AOC's funding needs for CVC construction and operations, we recommend that the Architect of the Capitol (1) implement the recommendations (which are consistent with our prior recommendations on schedule management) made by its construction management contractor in its November 9 report on its schedule evaluation; and (2) reassess its proposal to open the CVC in mid-December 2006 when it is confident that it has a project schedule that reflects realistic durations, enhanced logic, the resolution of concerns expressed by the Fire Marshal Division, and the impact of delays and contract changes.

Project's Estimated Cost to Complete Expected to Increase, but Our Comprehensive Assessment Awaits Schedule Stabilization

Mr. Chairman, our preliminary work shows the cost to complete the entire CVC project at around \$542.9 million without provision for risks and uncertainties. This preliminary estimate falls between our September 15, 2005, interim estimate of \$525.6 million without provision for risks and uncertainties, and our November 2004 estimate of about \$559 million with provision for risks and uncertainties. Our current estimate is substantially higher than MBP's updated estimate, and it exceeds the funding provided for the project to date. As we said at the Subcommittee's October 18 hearing, we are waiting for the project schedule to stabilize before we comprehensively update our November 2004 estimate of the cost to complete the project, including any costs to the government for delays. We plan to provide this updated estimate with and without allowances for risks and uncertainties and with adjustments for specific expected project completion dates.

We would now like to discuss the basis for our estimate and why we expect the project's costs to increase, why our estimate differs from MBP's, how much funding is currently available for CVC construction and how much more may be needed, and how much the Library of Congress tunnel's construction is likely to cost.

Estimate Is Preliminary

Our preliminary estimate of the cost to complete the entire CVC project, which we will discuss today,⁷ is based on information provided by AOC and its construction management contractor. It reflects our review of MBP's November 1, 2005, final report, which updates MBP's October 2004 estimate and includes supporting data; our review of CVC contract modifications and changes proposed between August 1, 2005, and October 31, 2005;⁸ the knowledge and experience we have gained from monitoring this and other major construction projects; and our view that the base CVC project is not likely to be completed before the spring of 2007. We have discussed our preliminary estimate with AOC; however, we have not completed other work needed for a comprehensive update of our cost-to-complete estimate. For example, we have not updated our previous discussions of the project's expected costs, risks, and uncertainties with other CVC project team members and fully assessed the schedule's impact on costs, because the schedule has not been stabilized. Furthermore, we have not incorporated any costs for delays over and above the amount included in our November 2004 estimate. Delays have occurred since then, but as of October 31, 2005, CVC construction contractors had not filed any requests for adjustments or claims with AOC for delays occurring after November 2004. AOC nevertheless expects to receive additional requests for adjustments, and AOC's construction management contractor believes that AOC may incur more costs than budgeted for delays. At this time, it is unclear who will bear responsibility for the various delays that have occurred at the CVC site, and it is therefore difficult to estimate their possible costs to the government.

CVC Costs Are Likely to Increase, Largely Because of Actual and Anticipated Changes and Delays

Assuming that the base project and the House and Senate expansion spaces are completed in the spring of 2007 and considering the qualifications just discussed, our preliminary estimate of the cost to complete the entire project is about \$542.9 million without provision for risks and uncertainties. This estimate is about \$17.3 million greater than

⁷We previously updated our November 2004 estimate (\$515.3 million) of the cost to complete the project without provision for risks and uncertainties for the Subcommittee's September 15, 2005, CVC hearing. See *Capitol Visitor Center: Schedule Delays Continue; Reassessment Underway*, GAO-05-1037T (Washington, D.C.: Sept. 15, 2005).

⁸MBP's estimate was based on contract modifications and proposed changes as of July 31, 2005, except that for sequence 2, MBP included updated information from AOC on contract modifications executed through October 14, 2005. Also, MBP initially issued its report on October 11, but issued a revision on November 1, 2005, based on comments it had received from AOC.

our September updated estimate of \$525.6 million without provision for risks and uncertainties and about \$16.1 million less than our November 2004 estimate of about \$559 million with provision for risks and uncertainties. The \$17.3 million increase is due largely to the following:

1. *Actual and anticipated changes in the project's work scope.* Most of these changes were associated with sequence 2 work, but some also occurred or are expected in other project components, such as preconstruction. Significant sequence 2 changes include the modifications to the CVC fire protection system that we discussed at the Subcommittee's October 18 CVC hearing, changes to the building's automated control system, and additional work to address gaps in the scopes of sequence 1 and sequence 2 work, such as additional waterproofing. Changes in the preconstruction component include moving security screening trailers and doing additional materials testing.
2. *Additional contingency funds.* We believe that AOC will need significantly more contingency funds for the remainder of the project for three major reasons: First, the actual or estimated costs for changes in sequence 2, the East Front interface, and the preconstruction project components either exceed or account for the majority of the funds budgeted for unanticipated work, and available information indicates that additional changes in these areas are likely as the project progresses. For example, the actual and proposed sequence 2 changes to date are more numerous and more costly (without any provision for risks and uncertainties) than we, AOC, and MBP anticipated in late 2004, and the actual and estimated value of the already identified changes greatly exceeds the budgeted contingency funding. Moreover, according to AOC's construction management contractor, only about half the value of sequence 2 work is complete. Given that about half the work remains and changes to the project have been frequent thus far, we believe that more changes are likely to require funding in the future. Second, a number of issues that were not included in MBP's analysis, such as the need for temporary dehumidification, have arisen. Proposed change orders for work to address these issues were not completed in time for the work to be included in MBP's report. Third, as MBP pointed out, the costs of many pending (proposed, but not yet approved) changes that were included in its report may be understated because they are based on AOC's and its construction management contractor's estimates rather than on the contractor's price. According to MBP, historically, AOC's construction management contractor has significantly understated the costs of pending changes. Thus, additional funds are likely to be needed to

cover the difference between the estimated and actual costs of the approved changes.

3. *Delay-related project management costs.* The schedule analysis underlying our November 2004 cost-to-complete estimate suggested that the CVC base project would most likely be completed in December 2006, and our November 2004 and September 2005 cost estimates therefore included funding for AOC's CVC staff and architectural and construction management contractors through that time. Although the specific expected completion date for the base project is still uncertain because AOC and its contractors have not yet finished their schedule reassessment, our work indicates that the base project is unlikely to be done before early 2007. Thus, our preliminary estimated cost to complete includes the estimated costs for extending AOC's CVC staff and architectural and construction management contractors for the base project to March 2007.⁹

Our Estimate Differs from MBP's Estimate Largely Because We Included More Items in the Project Scope and More Funds for Contingencies

Our preliminary \$542.9 million estimate of the cost to complete the CVC project is significantly higher than MBP's November 1, 2005, \$481.9 million estimate for several reasons.

- Our estimate includes the costs for the CVC's air filtration system; MBP's does not.
- MBP assumed the base project would be completed in December 2006; we considered the spring of 2007 more likely.
- MBP did not include the costs of all CVC construction-related work, such as the fabrication and installation of wayfinding signs or the fit-out of the gift shops. Our estimate includes these costs.
- MBP provided less contingency funding than we did for a number of project components (sequence 2, the House connector tunnel, the East Front interface with the CVC, and the House and Senate expansion spaces). We believe that our larger allowance is warranted, given the complexity of the work, the CVC project's experience with changes, and our experience in monitoring other Capitol Hill construction projects.

⁹This time extension estimate is largely based on information provided by AOC and MBP.

**Available Funding Is
Unlikely to Be Sufficient**

About \$528.4 million has been provided for CVC construction, and an additional \$7.7 million has been provided for CVC construction or operations.¹⁰ The \$528.4 million consists of

- the 527.9 million we discussed during the Subcommittee's October 18 CVC hearing and
- \$500,000 that the Department of Defense (DOD) originally provided to AOC for security enhancements for the East Front of the Capitol and that AOC now intends, with DOD's approval, to use for security enhancements related to the CVC's air filtration system.

According to AOC, it does not currently plan to use any of the \$7.7 million for CVC construction. Thus, our preliminary \$542.9 million cost-to-complete-estimate indicates that AOC would need about \$14.5 million more to complete the project, assuming it is completed in March 2007. As noted, this estimate is preliminary and does not provide for contractor delay costs beyond the amount included in our November 2004 cost estimate.

AOC does not believe that future changes will require as much funding as we do. We recognize that the total amount of funds that will be needed for contingencies, as well as for adjustments to contracts to offset the costs of delays, is unclear at this time and is subject to differing views. Nevertheless, the costs for these items will be a major factor in determining whether AOC will need additional appropriated funds. We plan to address both issues when we do our comprehensive cost-to-complete update early next year.

¹⁰AOC had planned to use \$100,000 of its fiscal year 2006 appropriation for CVC construction to move a fire alarm control panel in the Capitol building to the CVC. If the control panel is to be moved, AOC will then decide what appropriation account will be used to pay for this move. If other than CVC funds are used, the \$100,000 would be available for other CVC construction purposes subject to the approval of the House and Senate Committees on Appropriations. As we reported in September, AOC had also used about \$805,000 in CVC operations funds for certain construction work that had been funded by the fiscal year 2006 construction appropriation. These funds also could be used for other CVC work subject to the Committees' approval. AOC previously had about \$7.8 million remaining available for CVC operations or construction, but about \$100,000 has been rescinded.

Estimated Construction Costs for Library of Congress Tunnel under Limit, but Could Increase

Public Law 108-83 limits to \$10 million the amount of federal funds that can be obligated or expended for the construction of the tunnel connecting the CVC with the Library of Congress. As of October 31, 2005, AOC estimated that the tunnel's construction would cost about \$8.8 million, and AOC had obligated about \$4.7 million for it. The remaining estimated costs are for modifications to the Jefferson building to accommodate the tunnel and for contingencies. AOC expects to receive the bids for the Jefferson building work by November 22. Given that the work associated with the Jefferson building has not started and involves risks and uncertainties (since it will create an opening in the building's foundation and change an existing structure), we believe that AOC could receive higher-than-expected bids and is likely to encounter unforeseen conditions that could increase costs significantly. Both we and AOC plan to monitor the tunnel's construction closely to ensure that the statutory limit is not exceeded.

Worker Safety Has Improved

Worker safety will remain an important issue at the CVC site as new hazards arise with changes in the site's physical structure and increases in the number of employees and subcontractors in the months ahead. Since we testified in May 2005 on worker safety, AOC and its contractors have achieved improvements in key worker safety measures and actions. For example, the CVC injury and illness rate declined, from 9.1 in 2003 and 12.2 in 2004, to 5.9 for the first 10 months of 2005—below the 2003 industry average of 6.1. Furthermore, the CVC lost-time rate declined, from 8.1 in 2003 and 10.4 in 2004, to 4.0 for the same 10-month period—approaching the 2003 industry average of 3.1. The quality of the construction management contractor's monthly CVC progress reports has also improved. Whereas the reports for 2003 and 2004 contained inaccurate data for key worker safety measures, as we testified in May 2005, the reports since June 2005 have contained accurate worker safety data. (In one instance, however, the draft report we received from the construction management contractor contained inaccurate worker safety data, which were corrected after we pointed them out to the construction management contractor.) Finally, AOC's reporting of lost-time rates is now consistent with an updated definition issued by the Bureau of Labor Statistics in 2003.

AOC and its contractors have taken a number of actions during 2005 to improve worker safety at the CVC site. For example, they have

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- held periodic safety meetings with senior managers to elevate safety issues (and will schedule additional meetings as needed);
 - held a project safety day to increase CVC project employees' safety awareness;
 - provided and scheduled training on fall protection and electrical safety, for example, to elevate safety awareness and avoid accidents;
 - posted safety-related signs and banners around the CVC site to reinforce safety messages; and
 - added a second safety professional at the CVC project.

In addition, since this past summer, AOC's Central Safety Office has been involved in CVC worker safety. Specifically, the responsible official has (1) clarified his role on the project with the CVC Project Executive, (2) visited the CVC project site to obtain an understanding of general site conditions, (3) attended periodic CVC safety meetings and (4) reviewed safety-related data, reports, and meeting minutes. Drawing upon these efforts, the official has made suggestions to CVC management on ways to improve worker safety.

Poor housekeeping has been an ongoing issue at the site, and the sequence 2 contractor has recently taken actions to address this issue. Piles of construction debris and trash, improperly stored equipment and materials, and poorly maintained employee break areas have been identified in the construction management contractor's past safety audits. Although no injuries have been attributed to housekeeping issues, the construction management contractor and the sequence 2 contractor have recognized that these issues present an ongoing problem. To address these issues, the sequence 2 contractor is daily (1) cleaning up construction material debris and other items, (2) cleaning up the site's three assigned eating areas, and (3) removing five to seven truckloads of trash. In addition, the sequence 2 contractor has placed more bait traps around the site to control rodents.

Mr. Chairman, this concludes our statement. We would be pleased to answer any questions that you or Members of the Subcommittee may have.

Contacts and Acknowledgments

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Appendix I: Capitol Visitor Center Critical Construction Milestones October 19- November 17, 2005

Activity	Location	September 2005 scheduled finish date	Actual finish date
Orientation Lobby	Perimeter CMU walls	10/13/05	
Upper Level Assembly Room	Topping slab	10/20/05	10/20/05
East Front Subbasement	Interior CMU walls	10/27/05	
Exhibit Gallery	Wall stone Area 2 base	10/31/05	
Congressional Auditorium	Wall Stone Area 1	11/3/05	10/26/05
Upper Level Assembly Room	Wall stone area 1 layout	11/9/05	10/24/05
Exhibit Gallery	Wall stone Area 3 base	11/10/05	
Orientation Lobby	Interior CMU walls	11/15/05	
Exhibit Gallery	Wall stone Area 1	11/16/05	
Congressional Auditorium	Wall Stone Area 2	11/17/05	
Utility Tunnel	Excavate/shore Station Sta. 0.00-1.00	10/6/05	10/24/05
Utility Tunnel	Concrete Working Slab Sta. 0.00-1.00	10/11/05	10/26/05
Utility Tunnel	Waterproof Working Slab Sta. 0.00-1.00	10/14/05	10/31/05
Utility Tunnel	Install Mat Slab Sta. 0.00-1.00	10/20/05	11/10/05
Utility Tunnel	Install Mat Slab Sta. 1.00-2.00	10/24/05	11/07/05
Utility Tunnel	Install Walls Sta. 1.00-2.00	11/4/05	

Source: AOC's September 2005 CVC sequence 2 construction schedule for the scheduled completion dates and AOC and its construction management contractor for the actual completion dates.

Note: Actual completion information was obtained on November 10, 2005.

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