

DOCUMENT RESUME

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Information Relative to the Design and Construction of the New Federal Building in Williamsport, Pennsylvania. LCD-78-308; B-95136. March 13, 1978. 3 pp. + 2 appendices (12 pp.).

Report to Rep. Allen E. Ertel; by Fred J. Shafer, Director, Logistics and Communications Div.

Issue Area: Facilities and Material Management: Design and Construction of Federal Facilities (707).

Contact: Logistics and Communications Div.

Budget Function: General Government: General Property and Records Management (804).

Organization Concerned: General Services Administration.

Congressional Relevance: Rep. Allen E. Ertel.

Authority: Public Buildings Act of 1959 (40 U.S.C. 606). (40 U.S.C. 541; P.L. 92-582).

Cost increases for the design and construction of the new Federal building in Williamsport, Pennsylvania, were reviewed, and information was gathered relative to the canopy in the parking area, the need to redesign and raise part of the roof, some problems with the structural steel, and the General Services Administration's (GSA's) procedures for selection of architect-engineer firms. Findings/Conclusions: It was found that: (1) although final settlement is not complete, the total cost is expected to be approximately \$4.4 million; this is less than the total estimated cost of \$5,003,000 in the approved prospectus; (2) the canopy over the parking area was added after basement parking had been deleted from the building plans; GSA included it in the revised solicitation as an alternate item; (3) the courtroom was initially designed with a 9-foot, 8-inch ceiling height rather than the 16-foot height recommended by the Judicial Conference of the United States and agreed to by GSA for 40- by 60-foot courtrooms; after construction was underway, the courtroom was redesigned to conform to the 16-foot standard; (4) GSA's contracting officer believed that certain steel beams deflected more than anticipated, but their Architect-Engineer Deficiency Committee concluded that the architect-engineer firm was not negligent, and there should be no attempt to recover the increased costs from the firm; and (5) the architect-engineer firm for the project was selected by the Administrator of GSA; procedures now provide for ranking of interested qualified firms by an evaluation panel that makes a recommendation to the administrator of GSA. (DB)

5660

REPORT BY THE U.S.

General Accounting Office

Information Relative To The Design and Construction Of The New Federal Building In Williamsport, Pennsylvania

Although the total cost of the new building is within the amount approved by the Congress, GSA could have avoided some costs.

Costs were increased by at least \$114,000 because GSA contracting officials did not inform the designer of the required courtroom ceiling height, causing the ceiling to be redesigned after construction was underway.

Structural steel beams deflected during construction and GSA has not determined whether professional negligence is involved on the part of the architect-engineer designer.





UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS
DIVISION

B-95136

The Honorable Allen E. Ertel
House of Representatives

Dear Mr. Ertel:

In your letter of May 3, 1977, you requested us to review cost increases for the design and construction of the new Federal building in Williamsport, Pennsylvania. You were under the impression that the construction of the building involved substantial cost overruns, with much of the extra cost attributable to design errors which required costly adjustments after construction was underway. Subsequently, you informed us that you had questions about the canopy in the parking area, the need to redesign and raise part of the roof, and some problems with the structural steel. You also expressed an interest in the General Services Administration's procedures for selection of architect-engineer firms.

In summary we found that:

- Although final settlement is not complete, the total cost is expected to be approximately \$4.4 million, which is less than the estimated total cost in the approved prospectus of \$5,003,000.
- The canopy over the parking area was added after basement parking had been deleted from the building plans. General Services included it in the revised solicitation as an alternate item. The canopy would not have been included in the construction contract had the bid been equal to or more than the maximum estimated construction cost of \$3,983,000.
- The courtroom was initially designed with a 9-foot, 8-inch ceiling height rather than the 16-foot height recommended by the Judicial Conference of the United States and agreed to by General Services for 40- by 60-foot courtrooms. Subsequently, after construction was underway the courtroom was redesigned to conform

to the 16-foot standard. The additional work cost at least \$114,000.

--General Services' contracting officer believed that certain steel beams deflected more than anticipated. General Services' Architect-Engineer Deficiency Committee concluded that the architect-engineer firm was not negligent and there should not be an attempt to recover the increased costs from the architect-engineer. General Services informed us that the Committee is reevaluating its position on this matter.

--The architect-engineer firm for the Williamsport project was selected by the Administrator of General Services. Procedures now provide for ranking of interested qualified firms by an evaluation panel which makes a recommendation to the Administrator of General Services for final selection.

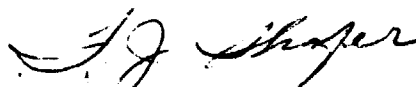
The details of our findings are contained in appendix I to this report.

General Services has reviewed a draft of this report and its comments are included in appendix II. General Services informed us that the report constitutes a fair appraisal of the design and construction issues. General Services suggested certain language changes in the report. We have considered those suggestions and have made appropriate revisions.

The architect-engineer firm also reviewed a draft of the report but did not submit written comments.

As arranged with your office, we are sending copies of this report to the General Services Administration and to the architect-engineer firm. Copies will also be available to other interested parties who request them.

Sincerely yours,



F. J. Shafer
Director

C o n t e n t s

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ABBREVIATIONS

| | |
|-----|---------------------------------|
| A-E | architect-engineer |
| GSA | General Services Administration |

DETAILS OF OUR FINDINGSBACKGROUND

In February 1968, the General Services Administration (GSA) submitted a prospectus to the Congress for the construction of a post office, courthouse, and Federal office building in Williamsport, Pennsylvania. The total estimated maximum cost of the project was \$4,633,000. This prospectus was approved by the House and Senate Committees on Public Works in May 1968.

Following that approval, the postal space requirements were first increased, then decreased, which necessitated the submission of revised prospectuses in 1970 and 1972. GSA submitted the final revised prospectus to the Congress in June 1972 for a courthouse and Federal office building with a total estimated maximum cost of \$5,003,000; \$3,983,000 for construction and \$1,020,000 for site, design, management, and inspection. This revised prospectus was approved by the House Committee on Public Works in June 1972 and by the Senate Committee on Public Works in September 1972.

In 1969, the project management was assigned to GSA's New York Regional Office. In 1971, due to an internal reorganization, the project was reassigned to GSA's Office of Operating Programs. That office was later transferred to GSA's Washington Regional Office.

The architect-engineer (A-E) firm of Burns and Loewe, Scranton, Pennsylvania, was selected in June 1970 to design the project. In mid-1971, the parties agreed to a fee of \$153,600 for concept documents, tentative preliminary documents, intermediate drawings, final tracings, and post-construction services. On December 23, 1971, a contract in the amount of \$156,500 was awarded to the A-E for the design of the project.

In October 1974, GSA solicited bids for construction of the building. Six bids were received ranging from \$4.9 million to \$5.5 million. GSA had estimated the construction cost to be a maximum of \$4 million. In January 1975, GSA notified the offerors that all bids were rejected because they exceeded the construction funds available. GSA then had the A-E redesign

the project and planned to phase the construction, with Phase I being the structural steel, and Phase II being all construction except the structural steel.

In March 1975, GSA solicited bids for Phase I, and awarded the structural steel contract in May 1975 for \$349,600 to the low bidder, General Steel Fabricators, Inc., of Latham, New York.

In May 1975, GSA solicited bids for Phase II, and awarded the construction contract in August 1975 for \$2,447,700 to the low bidder, J.B. Gibbons Construction, Inc., of Williamsport, Pennsylvania.

CONTRACT AND COST SUMMARY

Section 7(b) of the Public Buildings Act of 1959, as amended, allows the estimated maximum cost of an approved project to be increased by a maximum of 10 percent above the approved prospectus amount (40 U.S.C. 606). Therefore, GSA is authorized to fund the project to a maximum cost of \$5,503,000 without having to resubmit the project to the congressional committees. Although final settlements have not been concluded, the building is substantially complete, and final cost is expected to be about \$4.4 million. About \$572,000 of that amount has been expended from the Public Buildings Fund for site acquisition, management and inspection, and design and review. About \$3.8 million has been expended from the Purchase Contract Program for the contracted design and construction.

The contracts for the design of the building, the structural steel, and the construction have all been increased through amendments and change orders. Although the building is substantially completed, all contracts have not been finalized. Increases have amounted to about \$820,000. The contracting officer told us that he anticipates other construction change orders but they will have a minor effect on the total cost. The original contracts have been increased as follows.

| | <u>Initial amount</u> | <u>Increases</u> |
|------------------|-----------------------|------------------|
| A-E design | \$ 156,500 | \$232,694 |
| Structural steel | 349,600 | 8,022 |
| Construction | <u>2,447,700</u> | <u>577,572</u> |
| Total | a/ <u>\$2,953,800</u> | <u>\$818,288</u> |

a/Excludes a contract for about \$5,000 for other design work related to the structural steel matter.

Even with the increased contract amounts, the final cost is expected to be less than the authorized maximum amount.

The A-E contract has been amended four times as follows.

| <u>Purpose of amendment</u> | <u>Amount</u> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Advanced set of tentative drawings to serve as bidding documents, and final working drawings | \$ 19,079 |
| Revisions of mechanical/electrical drawings, specifications and cost estimates, and additional data to enable GSA to finalize the Environmental Impact Statement | 29,016 |
| Revisions of final working drawings, specifications, and cost estimates to reduce construction cost | 55,960 |
| Post-construction services and construction supervision services | <u>128,639</u> |
| Total | <u>\$232,694</u> |

PROCEDURES FOR SELECTION OF A-E FIRMS

In the past, the A-E firm was selected from firms that had expressed an interest in the project and any other firms

that GSA believed would be interested. The Regional Construction Management Division prepared a listing of potential firms, which a Regional advisory panel reviewed and prepared a list from which the Regional Administrator or the Administrator would choose the firm to design the project. The A-E selected for the Williamsport project was selected by this procedure, having been chosen by the Administrator of General Services.

The Congress enacted Public Law 92-582 (40 U.S.C. 541) in October 1972 to strengthen competition in the selection of A-E firms for Government projects. That act established uniform details for selecting A-Es. Those procedures have been incorporated in the Federal Procurement Regulations and GSA's selection procedures pamphlet. However, as we reported to the Congress (LCD-75-313, July 21, 1976), competition in the awarding of design contracts to A-E firms was not strengthened by that law. We have recommended to the Congress that competitive negotiations be required in the selection of A-E firms.

GSA's selection procedure for A-E firms changed because of Public Law 92-582. Projects are advertised in the Commerce Business Daily. Responding firms and those whose qualifications are on file with GSA are to be considered. A Regional advisory panel develops a list of firms that it considers to be the most competent for that project. Another GSA panel then interviews each of the firms listed, selects those it considers to be the best qualified, and ranks them in the order of preference for the project. This ranking is submitted to the Administrator with the recommendation that the highest ranked firm be chosen. If the Administrator does not choose the highest ranked, he states his reasons for choosing one of the others.

CANOPY OVER PARKING SPACES

Originally, the building design included a basement garage with parking space, maintenance shops, and a delivery area. In 1974, when the initial construction bids for the building exceeded the funds available, the plans were revised and the deletion of the basement garage was one of the major changes made to reduce costs.

As an alternate item in the revised construction solicitation, GSA included a canopy to provide shelter for parked

vehicles. If the bids received in response to the solicitation were equal to or more than GSA's estimated maximum construction cost for the project, the canopy would not have been included in the construction contract. Since the accepted bid was lower than the estimated maximum construction amount, GSA included the canopy in the construction contract at a cost of \$11,700. By a change order to the construction contract, lighting has been installed in the area at a cost of \$1,635.

Users of the 10 covered parking spaces and the number of spaces assigned to each are:

| | <u>Number of spaces</u> |
|---------------------------------|---------------------------------|
| Local Member of Congress | 1 |
| District Judge | 1 |
| Federal Bureau of Investigation | 3 |
| Marshal's Office | 2 |
| Probation Office | 1 |
| Geological Survey | 2 |

The spaces for the local Member of Congress and the District Judge were provided for security purposes and do not include members of their staffs. In addition to the covered spaces, there are 17 uncovered parking spaces reserved for various Federal agencies.

STRUCTURAL STEEL BEAM DEFLECTION

Erection of the structural steel framework for the building was started in November 1975. A question arose as to whether some of the structural steel perimeter beams were of adequate size. The beams supplied by General Steel met the specifications in the building design. However, according to the contracting officer, as the construction of the building progressed, it was noted that some of the perimeter beams deflected to the extent that they would have created problems in the execution of subsequent work. GSA's contracting officer attributed the deflection to the fact that the beams were too small and not of adequate strength.

The contracting officer told us that he believed that the A-E had made a design error, but the A-E disagreed and felt the beams were adequate. The contracting officer had the A-E prepare a solution which, when developed, he did not accept because he considered it impractical in terms of the extra work required. The contracting officer then had another solution developed by a structural engineering consulting firm at a cost to GSA of about \$5,000. The A-E did not charge GSA for its proposed solution. The construction contractor charged GSA \$31,500 for the extra work required.

The contracting officer asked the GSA A-E Deficiency Committee in February 1977 to review the case to determine whether the A-E had been professionally negligent in preparing the design and whether the A-E was liable to GSA for the cost of strengthening the structural beams.

The Chairman of the Deficiency Committee told us in September 1977 that the Committee determined that GSA could not prove that the A-E was negligent in the design and, therefore, GSA could not recover the added cost from the A-E. The contracting officer in November 1977 told us that he had been orally briefed by the A-E Deficiency Committee and had been told that, although the beams deflected more than expected, they did not view the degree of deflection as a serious problem. As of mid-December 1977, he had not received the official, written report of the Committee. In commenting on a draft of this report, GSA informed us that the Committee has made further inquiries into this matter which provide stronger support for finding professional negligence on the A-E's part. The Committee expects to complete its study in the near future and submit its findings to the contracting officer along with its recommendations on whether or not a claim should be made against the A-E.

COURTROOM SIZE

Judicial Conference standards

The Chief Justice of the United States established an Ad Hoc Committee on Court Facilities and Design in April 1971 to study and report to the Judicial Conference of the United States on ways to economize on cost and on the need for greater security and flexibility in the design and construction of Federal district courtrooms.

In October 1971, the Ad Hoc Committee reported that in all new courtroom construction each court facility should be equipped with one large (40' by 60') courtroom and such additional standard (28' by 40') courtrooms as may be required. The Committee report stated that the ceiling of the standard courtroom should be approximately 12' high over the activity area, with the dropped area approximately 10' high. They further stated that the ceiling of the large courtroom should be approximately 16' high. The Committee recommended that the Conference approve the dimensions for both the standard and the large courtroom.

On November 9, 1971, the GSA Assistant Commissioner for Construction Management issued a memorandum to all Regional Directors, Public Buildings Service, stating that:

"On October 29, Chief Justice Warren E. Burger and the Judicial Conference approved the Ad Hoc Committee on Facilities and Designs' recommendation * * *. Each court facility shall be equipped with one Large Courtroom (40' x 60') and such additional Standard Courtrooms (28' x 40') as may be required. * * * The new Standard and Large Courtroom designs are immediately applicable to those projects now in design, projects where design has been completed but project is unfunded for construction * * *."

The memorandum did not address the ceiling height. Drawings attached to the memorandum indicated a 10'-12' height for the standard courtroom, but none was shown for the large courtroom.

In a letter of December 20, 1971, the Director, Administrative Office of the United States Courts, informed all Chief Judges of the United States Court of Appeals and District Courts of GSA's plans for implementing the new courtroom design criteria. The letter stated that GSA's plans are " * * * entirely consistent with the Judicial Conference resolution and is binding where the construction of new courtrooms is concerned." Also, the letter states that the standards are " * * * now in effect and will be applied to all new building projects that are in the design process and those that have the design work completed * * *."

GSA guidelines

The GSA handbook on United States Courts, dated November 1959, as revised, prescribes standards for the design of Federal courts. This handbook provides guidance to those engaged in design work for GSA. According to the handbook the minimum size of a district courtroom was to be 38' 6" in width and 58' 6" in length with the ceiling height proportionate to its size and to the requirements for proper illumination, ventilation or air conditioning, and acoustics.

The handbook included standard details and design data drawings for the court facilities. Standard details were suitable for inclusion in A-E contracts, while design data were intended for guidance to A-Es and not to be part of the contract. The standard details covering district courtroom dimensions were deleted from the handbook in 1961. The design data, revised and effective since 1965, states that for 38' 6" by 58' 6" district courtrooms, the ceiling height was to be a minimum of 14' 0".

Although these specifications would have been superseded by GSA's implementation of the Judicial Conference standards, those standards were not incorporated in the handbook. We were told that the specifications are still in effect, pending revision of the handbook.

A-E design

GSA contracted with the A-E to design the new Federal building in December 1971. We were told by the A-E that since there was a large district courtroom approximately 25 miles from Williamsport, GSA originally planned a small courtroom for the new building. If the need arose for a courtroom larger than the one at Williamsport, then the one at the other location could have been used.

According to the A-E, his firm relied on GSA-provided standards, which were in the form of sketches, for the design of the courtroom. He stated that GSA provided the 1959 courts handbook which did not include the information on the design of district courtrooms established by the Judicial Conference, nor did GSA provide that data to the firm.

In about June 1972, the GSA project coordinator provided the A-E firm with new instructions and sketches on courtrooms. GSA changed its plans to include a larger 40' by 60' courtroom. According to the A-E, the sketches received showed a ceiling height of between 10' and 12' for the courtroom. The A-E then designed a courtroom that measured 40' by 60'. A review of the final design plans submitted by the A-E in April 1975 shows that the ceiling height was designed as 9' 8", lower than the criteria of 16' established by the Judicial Conference and also less than the height the A-E stated GSA provided him. The A-E stated that his tentative design submissions had been reviewed and approved not only by GSA, but also by the Administrative Office of the Courts. Since our major concern was determining the facts concerning the design of the ceiling at less than 16', we did not inquire as to what factors influenced the A-E to submit a final design plan with a 9' 8" ceiling which was less than the 10'-12' height that the A-E stated GSA had required of him.

According to the GSA project coordinator, who works with the A-E and provides GSA's requirements, the A-E was not given the 16' requirement for the courtroom. The project coordinator stated that he was unaware of the 16' requirement until the issue was raised in 1976. He gave the A-E a requirement to design the courtroom with a 12' ceiling. He stated that he did receive the memorandum of November 9, 1971, which he pointed out did not address the ceiling height. He later received various sketches from GSA headquarters, in which the only reference to ceiling height was 12'. He believed that the 12' height applied to both the standard and the large size courtroom and he provided this information to the A-E.

Identification of the problem and corrective action

According to the contracting officer, the GSA official responsible for administering the contract, the construction contractor constructed the courtroom according to the design. The contracting officer told us that he did not know why the courtroom was designed with less than a 16' ceiling height. The A-E building submissions were reviewed and approved by GSA in October 1974.

After all bids on the initial design exceeded the funds available, the A-E resubmitted design plans in April 1975, and GSA approved those plans and subsequently awarded the construction contract. When the District Judge raised the issue of ceiling height in June 1976, about 20 to 25 percent of the construction was completed, and the roof was on the building.

According to the District Judge, he received the final design plans for the court facilities in June 1976. He then noted that the height of the large courtroom was to be 9' 8" from floor to ceiling, which he considered inadequate. He informed GSA that it was not in accordance with the Judicial Conference standards. Subsequently, GSA agreed and contacted the A-E about redesign of the courtroom. Without charge to GSA, the A-E redesigned the courtroom whereby a new roof over the area would be installed, the original roof removed, and the ceiling raised to the height of 16'. GSA accepted this plan and in September 1976 issued the first change order related to elevating the courtroom ceiling. Other change orders were issued later, and costs were increased as follows.

| <u>Change order no.</u> | <u>Date</u> | <u>Work performed</u> | <u>Cost</u> |
|-----------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 24 | 9/76 | Construct the elevated roof structure (structural steel, joists, decking, etc.) | \$ 30,781 |
| 31 | 10/76 | Construct the exterior of the elevated courtroom (roofing, siding, carpentry, etc.), and removal and disposal of the original roof (steel beams, joists, decking, etc.) | 43,500 |
| 39 | 1/77 | Revised lighting and electrical system for the courtroom in lieu of the originally designated system including an integrated suspension ceiling | 26,255 |
| 47 | 2/77 | Revised air-conditioning system for the courtroom in lieu of the originally designated system | <u>13,381</u> |
| | | | <u>\$113,917</u> |

In addition to the above change orders and costs, other costs were incurred, such as the increased cost of millwork and the time extension for the construction contractor to complete the project, which are partly attributable to the ceiling change. We did not determine the portion of these other costs which could be attributed to the ceiling matter.

It must be recognized that had the ceiling height been properly designed initially, some of these increased costs, such as some of the cost of the revised lighting and air-conditioning systems, would have been incurred. On the other hand, other costs, such as the cost of removal and disposal of the original roof section, would not have been incurred.

GSA guidance revision

GSA has informed us that it is in the process of developing a new courts handbook, the U.S. Courts Design Guide, that will include the Judicial Conference standards. The proposed handbook, which it expects to issue in 1978, is in the final draft stage and is being reviewed by GSA and the Administrative Office of the Courts. The Administrative Office of the Courts worked with GSA in the development of the proposed handbook. Issuance of the handbook has been delayed because of questions about certain needs, such as bankruptcy courts and magistrate's space allotments. According to a GSA official, the handbook will include space plans and drawings for the following district courtrooms

- a large courtroom, 40' by 60' by 16',
- an intermediate courtroom, 34' by 44' by 12' (10' over the visitors area), and
- a standard courtroom, 28' by 40' by 12' (10' over the visitors area).

We believe this publication should facilitate the design and construction of Federal district courtrooms and with proper dissemination and usage will prevent dimensional problems, such as what occurred at Williamsport.

UNITED STATES OF AMERICA
 GENERAL SERVICES ADMINISTRATION
 WASHINGTON, DC 20405



Honorable Elmer B. Staats
 Comptroller General of the United States
 General Accounting Office
 Washington, DC 20548

February 8, 1978


Dear Mr. Staats:

The General Services Administration has reviewed your draft of a proposed letter to The Honorable Allen E. Ertel, House of Representatives, along with your draft of a proposed report entitled "Information Concerning Various Aspects of the New Federal Building in Williamsport, Pennsylvania." We believe that your letter adequately addresses Congressman Ertel's concern, and that the report constitutes a fair appraisal of the design and construction issues as well as the selection of an architect-engineer for the project.

We concur in general with your documentation of the background and historical data relative to this project and the statement that the proposed GSA Handbook, U.S. Court Design Guide, will facilitate the design and construction of future Federal courtrooms. However, we recommend that some changes to the draft be made to provide for better understanding of the development and execution of the design and construction of the project. We have noted these recommendations, underlined in red, directly on your draft which is enclosed for your consideration. [See GAO note.]

If you have any questions, we would welcome the opportunity to discuss them with you.

Sincerely,



Jay Solomon
 Administrator

Enclosure

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GAO note: A copy of the draft report showing GSA's suggested changes is not attached. We have considered GSA's suggestions for the final report and have made appropriate revisions.