

**National Security and
International Affairs Division**

B-226595

October 23, 1987

The Honorable Lawton Chiles
Chairman, Committee on the Budget
United States Senate

Dear Mr. Chairman:

This is our overall report in response to your October 7, 1986, request that we review the Department of State's efforts to construct U.S. embassy facilities in Moscow, the Soviet Union. Interim reports were issued in April 1987 and June 1987 on certain facets of the project.¹ In this report, we explain why this project has taken longer and cost much more than anticipated. We also compare the construction of the U.S. embassy in Moscow with the construction of the Soviet embassy in Washington, D.C. We did not assess the security problems at the U.S. embassy, which have been the subject of investigations by others.

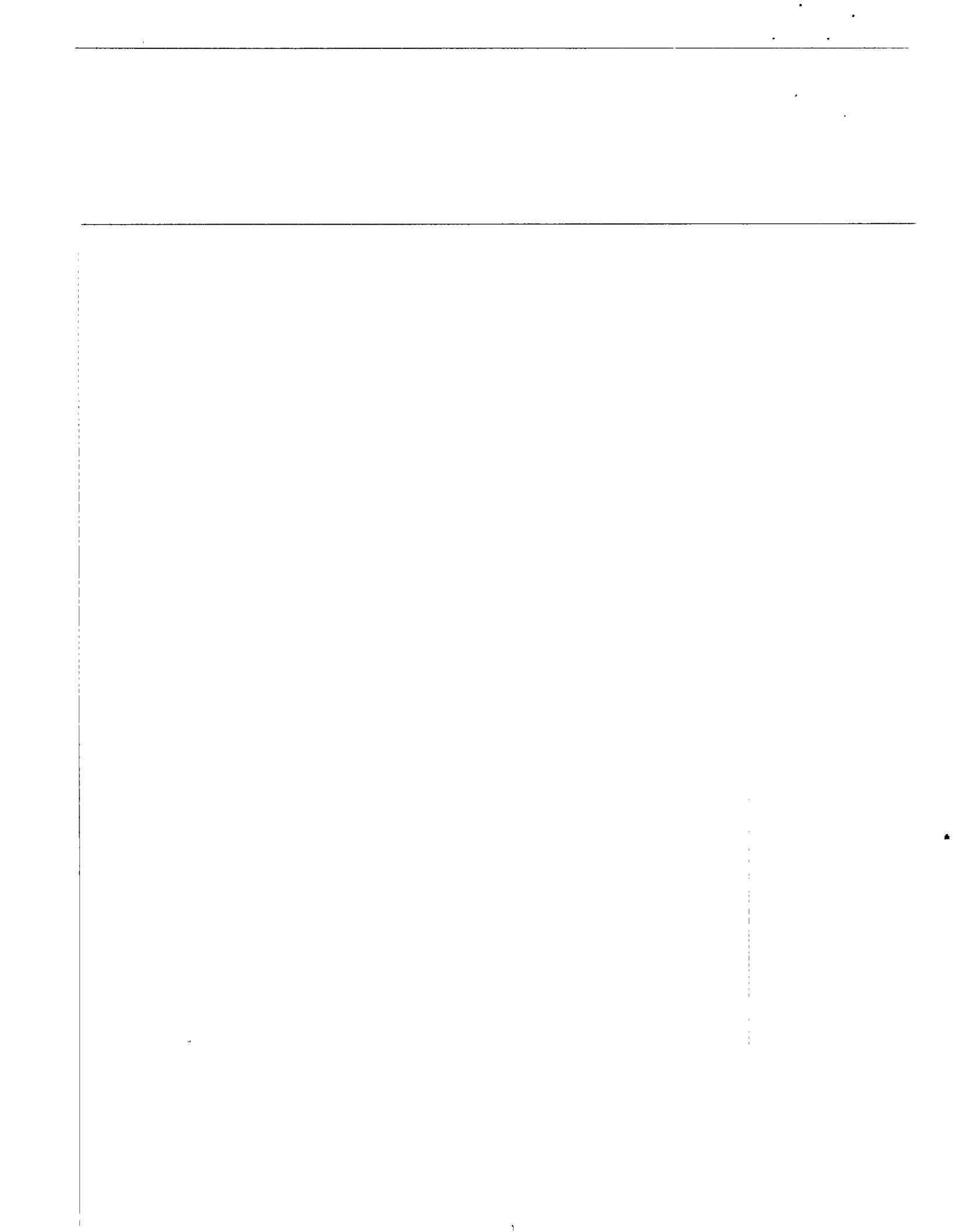
The U.S. embassy complex in Moscow is the largest construction project ever attempted by the State Department's Office of Foreign Buildings Operations (FBO). Originally the project was to have been done simultaneously with the construction of the Soviet embassy in Washington.

Neither the Soviet nor U.S. project is finished. However, the Soviets began occupying their residential facilities in 1979; the United States did not occupy any of its facilities until 1986.

Currently, all the buildings in the U.S. complex have been completed except for the new chancery office building, which is about 65 percent complete. Work there has been at a standstill, pending the outcome of U.S. security reviews. At the Soviet complex in Washington, all the buildings are finished except for the chancery and reception hall, which are about 70 to 80 percent complete, and work is continuing at a slow pace according to U.S. officials. The Soviet and U.S. chanceries are to be occupied simultaneously at an agreed-upon date.

Although the origins of these projects date back to the late 1960s, negotiations of necessary agreements delayed the actual start of construction on the Soviet and U.S. projects until 1977 and 1979, respectively.

¹Overseas Construction: Design and Construction of U.S. Embassy Complex in Moscow (GAO NSIAD-87-125BR, Apr. 10, 1987) and Overseas Construction, Classified Information Relating to the Moscow Embassy Project (GAO C-NSIAD-87-16, June 17, 1987)



U.S. State Department and the Soviet Ministry of Foreign Trade. In accordance with the agreement, the Soviets had access to the U.S. free market and could solicit competitive bids. However, in line with Soviet practice, and notwithstanding the terms of the agreement, U.S. officials could contract only with the foreign trade firm authorized by the Soviet government to contract with foreign entities for construction work.

Under a 1977 protocol, the United States agreed that the Soviets could start construction in March 1977 and occupy the residential buildings, schools, and clubs when completed. In return, the Soviets agreed that the contract price for the U.S. embassy in Moscow would not be higher than the cost per gross cubic meter of the construction of the Soviet embassy complex in Washington. The Soviets also agreed to lease to the United States 14 apartments, warehouse storage space, improved facilities for the Anglo-American school, and a recreational area or a country house.

Design Changes

There have been 35 major design changes to the U.S. embassy complex in Moscow. Although some of them reduced project costs and/or accelerated installation, most of the changes increased costs. Security enhancement revisions were the most costly.

FBO indicated that 13 major design changes were security enhancements due to changes in security conditions, 10 were based on value engineering, 6 were necessitated by the inability of the Soviets to provide specified materials or to comply with design requirements, 3 were implementations of designs not included in the original design, and 3 corrected design errors.

Contracts With U.S. Firms

Sixty-eight construction and material contracts totaling about \$111.4 million have been awarded to U.S., Soviet, and third-country contractors. The Soviet contract is the largest at \$56.9 million; the remaining \$54.5 million was awarded primarily to U.S. contractors. The Soviet contractor was responsible for all initial work, including site preparation and structural work; interior finishing work was carried out by U.S. firms.

Our review of nine of the largest construction and material contracts awarded to U.S. firms showed that these contracts had been modified a total of 80 times, increasing their original combined amounts of \$36.5 million by a total of \$10.9 million. Generally, these modifications

Because the United States and the Soviet Union agreed to use local contractors and local building materials for site and structural work, prompt completion of the U.S. embassy complex was dependent on a Soviet-designated firm.

In 1976 the State Department estimated that the entire U.S. complex would be completed by July 1982 and would cost between \$75 million and \$100 million. However, as of March 1987, the Congress had appropriated \$192 million, of which the Department had obligated about \$146 million and expended about \$137 million.

The U.S. project experienced increased costs in the construction phase primarily because of (1) increased project requirements and inflation (\$43.7 million), (2) security enhancements (\$36.8 million), and (3) cost overruns caused by Soviet delays in project completion (\$20 million). The State Department has already submitted claims for compensation from the Soviet contractor and may submit even more claims when its ongoing assessment is completed. However, the Soviet contractor has submitted counterclaims against the State Department.

The long delays in project completion were principally due to (1) initial delay by the Soviet contractor in site preparation, (2) lack of a sufficient supply of adequately trained Soviet craftsmen, (3) the Soviet contractor's failure to follow the sequencing of the construction schedule, (4) Soviet construction that required extensive rework, (5) changes in U.S. security requirements, (6) changes necessitated by Soviet contractor's inability to supply certain materials and to build within specified tolerances, and (7) lack of prompt supply of some materials.

Formal Agreements

The United States has entered into several agreements with the Soviet Union concerning the construction of embassies. The 1969 Agreement on Embassy Sites gave each country an 85-year lease on property in Moscow and the District of Columbia, respectively, to build embassy facilities. This agreement called for a construction agreement to be completed within 120 days, but it took more than 3 years.

In the 1972 Agreement on Conditions of Construction, the United States and Soviet Union agreed that certain features of design, technology, and methods of construction would be carried out by local firms using local materials. The agreement further provided that both the United States and the Soviet Union could select a general contractor to do this work from a number of local firms or organizations with the assistance of the

Soviet officials the problems of slow progress/delays and failure to follow the master construction schedule, construction activity would increase but only for short periods of time (a few days to a few weeks).

Quality of Construction

FBO halted Soviet work on the new office building in August 1985 because of security concerns. Subsequent security inspections have indicated that the new office building has been extensively permeated with Soviet eavesdropping devices. However, recent studies by the National Bureau of Standards and several private consulting firms have concluded that the building is structurally sound, although some remedial work remains to be done. FBO officials believe that the facilities they accepted were of good quality. However, building them took longer and costed more than expected.

U.S. Controls Over Soviet Embassy

Believing that the Soviets had been proceeding more quickly than the United States with the construction of their embassy, in part because the Soviets did not have to face the series of bureaucratic hurdles and delays that U.S. officials had to face in Moscow, the State Department decided in 1985 to try to change that.

According to a State official, the Department never interfered with U.S. private contractors who worked on the Soviet embassy in Washington. But, under the provisions of the Foreign Missions Act,² the State Department in 1985 began controlling the acquisition of all goods and services for the Soviet embassy complex. To bring U.S. practices regarding the provision of goods and services into line with Soviet procedures, all Soviet purchases were to be made through the State Department. Then, in April 1987, the State Department notified the Soviets that the Department would no longer arrange such purchases and the Soviets would be required to import all goods related to their embassy project in Washington.

Appendices I through V provide more details about the various construction aspects of the U.S. embassy complex and a comparison with the Soviet embassy project.

²The Foreign Missions Act of 1982 (Public Law 97-241) authorizes the Secretary of State to regulate the activities of official missions of foreign governments in the United States on the basis of reciprocity. State Department commented that (1) prior to passage of this act (which was effective in 1983), the Department could not legally regulate the activities of U.S. contractors and (2) by the time the act was passed, U.S. contractors had already substantially completed any work at the Soviet embassy project that could be regulated.

were because of extensions of contractor performance due to Soviet construction delays, new security requirements, replacement of obsolete materials, and the addition of fire-treated materials. For example, the two largest contracts were revised a total of 49 times, increasing these contracts by a total of \$8.9 million. However, \$6.5 million of the \$8.9 million was extra cost for extension of performance necessitated by Soviet delay.

Construction Delays

The U.S. embassy in Moscow encountered numerous delays. According to FBO officials and documentation:

- The Soviets were slow in completing early site and foundation activities. The Soviets delayed the provision of municipal utilities. Soviet completion of a temporary perimeter construction fence took 7 months longer than expected, delaying the pouring of pile caps. Groundwater problems, which the Soviets had responsibility to correct, lasted well into the construction phase causing delays and substantial waterproofing rework.
- A major source of delay was the low quantity and low quality of the craftsmen furnished by the Soviets to support U.S. contractor work according to contract requirements. The Soviet contractor furnished only 60 percent to 65 percent of the numbers of crafts people required by U.S. contractors, and many had to be trained by U.S. contractor personnel. After they were trained, many were removed by the Soviet contractor for work on other projects and replaced with new, untrained people.
- The Soviet contractor was required to redo considerable work in key areas to meet acceptable quality standards, which added to the construction time.
- The Soviets failed to follow the sequence of work established by the master schedule. This, along with the Soviet contractor's inability to provide some specified materials and his out-of-tolerance construction, exacerbated the problems of timely supply of some Soviet and U.S. materials and the coordination of work activities of the Soviet contractor and U.S. contractors.
- Former on-site project directors told us that they were frustrated by their inability to control the Soviet work. The Soviet contractor was often unresponsive to U.S. complaints. In essence, FBO on-site officials felt that they lacked adequate leverage to properly oversee the prompt completion of the project. Their concerns were well known within the Department. After the Ambassador or other U.S. officials raised with

of Management and Budget. We will also make copies available to others upon request.

Sincerely yours,



Frank C. Conahan
Assistant Comptroller General

State Department Comments and Our Evaluation

The State Department, in commenting on a draft of this report (see app. VI), said that the problem of coordinating Soviet and American work was exacerbated by Soviet malperformance, such as noncompliance with scheduled sequencing of work; inflexibility in assignment of labor to specific work areas; inadequate supply of labor to meet work requirements; noncompliance with design tolerances, requiring rework or redesign; and reacquisition of materials and nonavailability of specified materials. The Department added that (1) it was only because of FBO coordination of work activities under unusual and difficult circumstances that seven of the eight buildings were completed according to the design and (2) the eighth building (office building) would have been similarly completed except for the security issue.

Nevertheless, the project has taken longer and cost more than anticipated, and FBO officials told us they were frustrated with their inability to control the Soviet work and that U.S. leverage to achieve contract compliance was inadequate. They felt that the 1977 U.S.-Soviet Protocol had substantially diminished the leverage they could have otherwise exerted.

Objective, Scope, and Methodology

We reviewed activities related to the construction of the U.S. embassy complex in Moscow. We did not address the security aspects of the U.S. embassy project, which have been reviewed by others.

During our review we (1) met with the State Department officials in Washington, D.C., to discuss project management and (2) reviewed State Department records, correspondence, contracting and cost data, project management reports, and other program documentation. From January 5 to 17, 1987, we visited the U.S. embassy construction site in Moscow, where we toured the facilities, reviewed on-site records, and met with U.S. embassy officials, FBO project personnel, and representatives of the U.S. architectural and engineering firm. We did not discuss the project with Soviet representatives or Soviet contractor personnel. Our work was conducted from December 1986 to May 1987 in accordance with generally accepted government auditing standards.

Unless you publicly announce the contents of this report or authorize its release earlier, we plan no further distribution until 30 days from its issue date. At that time, we will send copies to other interested congressional committees, the Secretary of State, and the Director of the Office

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Abbreviations

FBO	Office of Foreign Buildings Operations
GAO	U.S. General Accounting Office
SVSI	Sojuzvneshstrojimport

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at an agreed-upon date after final completion and acceptance. All other buildings could be occupied at any time after completion and acceptance.

- Construction of the embassies would be executed in two stages. Stage one would include site and structural work. Taking into account the principle of mutuality, specific features of design, technology, methods of constructing buildings accepted by each party, and economic factors, the work in stage one would be carried out by local organizations or firms, using local building materials. The United States and the Soviet Union could select a general contractor from a number of local firms or organizations to do this work. The work under stage two, that is, interior finishing work and equipment, would be carried out either through local organizations or by each party's own sources.
- Based on contracts with a general contractor and subcontractors, each party would have the right to exercise technical control and supervision from the time construction began until all of the buildings were accepted by the country for which they were being constructed. Each party could maintain a mutually agreed-upon number of administrative and technical personnel to execute such control and supervision.

In line with this agreement, the Soviets were able to solicit bids from American firms for the construction of their project in Washington. However, in line with Soviet practice and despite the terms of the agreement, the United States had to use a Soviet-designated foreign trade firm to adapt the U.S. design to Soviet construction techniques and building materials. The United States also had to use this same firm for phase one construction.

State Department records show that various factors were considered before the Department agreed to use Soviet labor and materials. For example,

- monitoring a large number of Soviet construction workers in the United States to build the Soviet embassy would be a significant counterintelligence challenge;
- having a large number of American construction workers in Moscow to construct the U.S. facilities would be costly, and the Soviets had pledged their full cooperation in providing qualified Soviet workers for the project; and
- the Soviets had built all other foreign embassies in Moscow.

Negotiations to refine the 1972 Conditions of Construction continued for over 4 years.

Formal Agreements With the Soviets on Construction of Embassies

When the United States and the Soviet Union agreed in 1969 to exchange properties and cooperate in building their respective embassy complexes, construction of these complexes was intended to be parallel. The United States permitted the Soviet Union to begin construction in 1977. It was not until 1979 that the United States signed a construction contract with a Soviet firm.

1969 Agreement on Exchange of Sites

On May 16, 1969, the United States and the Soviet Union signed the Embassy Sites Agreement, which provided that the two countries would make land available in Moscow and Washington, D.C., for the construction of new embassy complexes. Under the agreement, the United States would receive an 85-year lease free of charge for a 10-acre plot in Moscow and continue leasing the ambassador's residence located on a 1.8-acre site. In exchange, the United States agreed to lease a 12-acre site in Washington, D.C. to the Soviet Union for 85 years free of charge. The agreement specified that each party would facilitate the construction of the other party's complex and that a separate agreement on conditions of construction would be concluded within 120 days after signing this agreement.

The United States also agreed to vacate its present embassy buildings in Moscow within 4 months after the new buildings were ready for occupancy. The agreement did not specify that the Soviet Union had to vacate its old embassy building in Washington upon completion of its new complex. In 1986, the United States notified the Soviet Union that it wanted to retain the old embassy buildings when the new project was completed. U.S. officials want to use it as a combination of apartments, offices, and storage space and indicated it was ideally located only a few blocks from the new embassy complex.

1972 Agreement on Conditions of Construction

The Agreement on Conditions of Construction was signed in December 1972. This agreement came more than 3 years after the 120-day deadline specified in the 1969 agreement. According to State Department records, the deadline was extended repeatedly due to disagreements about the height of the office buildings and about respective responsibilities during construction. The 1972 agreement included the following conditions of construction:

- To the extent possible, the parties would agree on target dates for building their embassies to guarantee completion of the work at approximately the same time. The chanceries would be occupied simultaneously

1979 Construction Contract

On June 30, 1979, FBO signed a construction contract with Sojuzvneshstrojimport (svsi), the foreign trade firm designated by the Soviet Ministry of Foreign Trade. The contract was signed nearly 2 years after the Soviets had signed a contract with a U.S. firm to begin construction of housing units in Washington.

The negotiations for the construction contract on the U.S. embassy started in July 1978 and were not completed until June 1979. The major issues were the technical control of construction and cost. By the time the United States had completed the contract negotiations, the Soviet housing units were essentially complete.

The construction contract for the U.S. embassy project provided that svsi would (1) perform certain design work; (2) perform all initial work, including site preparation and structural work; and (3) install electrical and mechanical systems and perform architectural finishings of floors one through three of the new office building under the supervision of U.S. contractors. Interior finishings of floors four through eight of the new office building were to be done exclusively by Americans. The contract provided that the United States could have a maximum of 50 specialists on location for construction, installation, and supervision.

1977 Protocol

Before the 1977 protocol, various State Department officials had stressed the importance of maintaining parallel construction between U.S. and Soviet embassies. According to one internal 1975 State Department document, (1) strict reciprocity in day-to-day dealings with the Soviets was needed; (2) Soviet authorities had shown minimum cooperation on the U.S. project and were unlikely to improve unless forced to in their own interest; and (3) linkage with progress of the Soviet embassy complex was the best and perhaps the only way to ensure Soviet cooperation essential to the timely and proper completion of the U.S. embassy complex. Nonetheless, in March 1977 the Department of State signed a protocol agreeing to allow an early Soviet embassy construction start in return for certain concessions on the price for construction of the U.S. embassy and for access to additional facilities.

The protocol set forth the following agreements:

- The final cost of constructing the U.S. embassy complex in Moscow would be determined at the signing of the construction contract, but the gross cubic meter cost of construction of the U.S. embassy complex would not be higher than the cost per gross cubic meter of the construction of the Soviet embassy complex.
- The Soviets could begin construction in Washington at any time after the exchange of sites;¹ construction of the U.S. embassy complex would begin in May 1978. The residential buildings, schools, and clubs of the U.S. embassy in Moscow and the Soviet embassy in Washington could be occupied at any time after completion and acceptance for their designated use.
- The Soviets would lease to the United States improved school facilities, 14 apartments, warehouse space, and recreational land or a country house.

The United States did not take the warehouse or recreational sites offered because U.S. officials refused to pay the high annual fees for the properties. Subsequently, the Soviets proposed and the United States agreed to an exchange of properties in 1979—warehouse and recreational sites near Moscow for additional land (4 acres) for the Soviets at their existing recreational site in Maryland.

¹The exchange of sites occurred on March 30, 1977, 4 days after the protocol was signed.

contractor to elevation requirements of the concrete decks. FBO was concerned that when accumulations of ice and snow thawed, water would infiltrate the balcony door windows and cause damage to flooring and drywall. To correct the problem, FBO contracted with a U.S. firm to provide and install balcony enclosures; however, installation on the balconies is not complete, and FBO has notified the contractor that the quality of the balcony enclosures does not meet the contract requirements. FBO planned to submit a damage claim for extra costs incurred to correct the problem and has notified both the Soviet contractor and the architect of a forthcoming claim. However, as of July 1987, FBO did not know the total cost to correct the problem. The apartments, in the meantime, are mostly occupied. FBO officials advised us that they were also reviewing other design changes to determine whether recouping payments for additional costs incurred were justified.

The Soviets proposed two major design changes, which FBO approved at no additional cost. One substantially increased the number of piles and the size of the pile caps and, according to FBO officials, resulted in an increase in the overall stability of the foundation. The other proposal concerned adding a wall to separate the water reservoirs under the courtyard in front of the office building from the subterranean wall of the office building. According to FBO officials, the original design specified a common wall, which presented a risk of water seepage through the wall into the basement of the new office building.

The Soviet contractor has complained that the United States was slow in approving the construction design plans. According to claims by the Soviet contractor, U.S. officials did not approve all the working drawings until 21 months later than stipulated in the master schedule. U.S. officials agreed that they did not approve all the Soviet drawings within the agreed-upon time frames, but they said all the drawings were acted upon in time to preclude delaying the Soviet contractor.

In rebuttal to the Soviet claim, FBO stated that

"Approximately 2400 Soviet drawings were submitted over a very short time frame [a 3-month period]. Many of the drawings were without referenced and required technical details. Many were submitted far in advance of need based upon the master schedule. They were reviewed pursuant to scheduled need. Technical data not submitted was repeatedly requested and many drawings had to be disapproved and returned with multiple questions and comments. The Soviets were months — and in some cases over a year — late in submitting necessary technical data and in correcting mistakes."

U.S. Embassy Project Suffers Delays and Increased Costs

Numerous factors have contributed to the long delays and increased costs the State Department has experienced in constructing the new U.S. embassy in Moscow. However, the incomplete office building, although now plagued with security problems, has been declared structurally sound and the State Department has accepted as complete virtually all other parts of the project.

In 1976 the State Department estimated that the entire U.S. embassy complex would be completed by July 1982 and would cost between \$75 million and \$100 million. However, as of March 1987, the Congress had appropriated \$192 million. The project experienced increased costs in the construction phase primarily because of (1) increased project requirements and inflation (\$43.7 million), (2) security enhancements (\$36.8 million), and (3) cost overruns caused by Soviet delays in project completion (\$20 million).

Design Changes

Since November 1979, the architectural firm issued 130 bulletins to document revisions to the original design. According to FBO, 35 of these bulletins were considered major design changes (i.e., involving changes throughout the complex or costing more than \$20,000).¹ Of the 35 major revisions, 13 were security enhancements due to changes in security conditions, 10 were based on value engineering, 6 were necessitated by the inability of the Soviets to provide specified materials or to comply with design requirements, 3 were implementations of designs not included in the original design package, and 3 corrected design errors. The changes included general electrical revisions, the substitution of drywall for brick partitions, roof modifications, the addition of gatehouses, and the detailed design of floors 4 through 7 of the office building (the secure area limited to security cleared American construction workers).

Some design revisions reduced project costs (e.g., substituting drywall for masonry wall construction reduced the costs by about \$1.5 million), but most changes increased costs. The most significant cost increase was due to security enhancements, which totalled \$36.8 million.

A few of the major design changes were related to technical errors. For example, one major change involving the housing units' balconies resulted from inadequate design and the noncompliance by the Soviet

¹The majority of the remaining 95 changes were related to technical clarification of the design, changes necessitated by Soviet construction techniques, and the updating of obsolete materials.

of waterproofing and long delays, such as in constructing one of the housing units.

- The U.S. contractors generally complied with quality standards without their work being rejected and redone, but Soviet work required considerable rework to be acceptable.
- Construction materials were ordered and supplied at improper times. Work of the Soviet and other contractors was not properly coordinated, despite frequent coordination meetings. When Soviet work was not performed in sequence with the approved master construction schedule, other contractors could not proceed with their work as planned.

We reviewed nine of the largest construction and material contracts awarded to U.S. firms. Originally these contracts totaled \$36.5 million, but were subsequently modified a total of 80 times, increasing their combined total to \$47.4 million as of December 31, 1986. Generally, these modifications were due to extensions of contractor performance, due to Soviet construction delays, new security requirements, replacement of obsolete materials, and the addition of fire-treated materials. The two largest contracts (one for electrical and mechanical work and the other for architectural finishing) were modified 28 and 21 times, respectively. Contract modifications increased the electrical and mechanical contract by \$7.3 million and the architectural finishing contract by \$1.6 million. The major price increases for these contracts (\$5.1 million and \$1.4 million, respectively) were attributed to the need to extend the contract performance due to the Soviet contractor's delays.

Beginning in 1980, numerous unsuccessful attempts were made to persuade the Soviet contractor to conform to the master schedule, according to FBO officials. In December 1983, when the Soviet firm was to have completed its work, FBO developed a revised master plan to (1) reflect the work completed up to that time, (2) establish a critical path sequence for completing the complex, and (3) attempt to keep the remaining work of the contractors coordinated.³ This effort was coordinated with both sides and a copy of the revised master plan provided to the Soviet contractor for signature. According to FBO officials, the Soviet contractor never formally acknowledged or agreed to the revised master plan. However, FBO advised us that, except for the office building, the

³According to FBO, the U.S. position has consistently been that the proposed 1983 schedule revision and subsequent proposed revisions were never intended to revise the contract in the sense of giving the Soviets relief from past delays they caused

According to FBO officials, 19 of 52 Soviet structural steel working drawings were disapproved by FBO. Under the contract terms, they were to be resubmitted within 15 days. The Soviets resubmitted them after 13 months.

Construction and Progress

Sixty-eight construction and material contracts totalling about \$111.4 million were awarded to U.S., Soviet, and third-country contractors. The Soviet contract was the largest at \$56.9 million; the remaining \$54.5 million was awarded primarily to U.S. contractors.²

According to FBO officials and documentation, the lack of timely site preparation and the Soviet contractor's failure to follow the master construction schedule caused serious problems in the completion of the complex. Before the start of construction, FBO and SVSI agreed to the schedule that showed the sequencing for building the different facilities. However, according to FBO, the Soviet contractor ignored the schedule from the beginning and started construction on facilities in a different sequence than was called for in the plan, despite repeated FBO demands for compliance.

According to FBO officials, this random pattern of work caused some construction materials to be ordered and staged improperly. It conflicted with and often delayed the work of the American contractors, who were trying to follow the master schedule. It also caused conflicts between FBO and the Soviet contractor over the orderly approval of various working drawings. The following examples are taken from FBO documents and correspondence to the Soviet contractor.

- Contract documents specified that concrete pile caps could not be poured until a temporary construction fence was completed and the site secured under American supervision and control. The Soviet contractor estimated that the fence would be completed about January 1, 1980, within the established milestone dates; however, the date was revised unilaterally by the Soviet contractor several times despite FBO follow-ups. The fence was completed and accepted by FBO about 7 months late, on August 1, 1980.
- Early work was delayed by a significant groundwater problem. Despite repeated warnings from FBO to the Soviet contractor, the groundwater problem lasted well into the construction program, causing much rework

²In addition, FBO awarded service contracts for such things as nonpersonal services, material transportation, housing for U.S. personnel, and other services.

U.S. officials have complained about the consistently low productivity of the Soviet contractor's work force. When the U.S. Ambassador and other U.S. officials raised concerns about the Soviet failure to follow the master schedule, the slow progress, and delays with Soviet officials, productivity would increase for brief periods (a few days to a few weeks), and then it would subside, according to FBO officials.

According to FBO officials, construction delays were also caused by the Soviet contractor's failure to provide the number and type of specialty craftsmen to maintain progress, failure to meet accepted quality standards, and the inability to supply specified materials.

FBO estimates that the Soviet contractor furnished only 60 percent to 65 percent of the numbers of craftsmen required by U.S. contractors, and many had to be trained by U.S. contractor personnel. After they were trained, many were removed by the Soviet contractor for work on other projects and replaced with new untrained people, according to FBO.

FBO experienced problems related to the quality of Soviet construction, and Soviet failure to meet specified construction tolerances hindered architectural finishing. For example, in December 1984, FBO notified the Soviets that U.S. contractors had reported that certain Soviet-laid masonry walls were out of alignment, not in the design locations, and were out of plumb beyond specified design tolerances. As a result, finish material design dimensions could not be maintained using the planned finish wall design and normal installation procedures. FBO officials stated that they often required the Soviet contractor to redo construction in order to meet the desired quality standards.

The Soviet inability to furnish specified material, such as fireproofing plaster, required redesign to use U.S. material, and its acquisition and shipment took extra time. The U.S. claim against SVSI includes the extra cost incurred.

FBO officials cited radiator covers as another example of problems faced in trying to complete construction. The original design required six different radiator cover sizes; however, because construction was not within specified tolerances, 26 different sizes had to be used.

Former on-site FBO project directors told us that they were frustrated with their inability to control the Soviet work. FBO had to repeatedly notify the Soviet contractor of problems and wait for the Soviets to take

Appendix II
U.S. Embassy Project Suffers Delays and
Increased Costs

other seven buildings were substantially completed by the completion date shown on the revised master plan.

In February 1986, FBO estimated a potential Soviet delay of about 1,000 days beyond the original completion date based on a calculated November 4, 1986, completion. FBO gave the following example of how a Soviet delay extended the construction time.

"In April 1983 the Soviet contractor violated the contract by abandoning the project for approximately three weeks. Work thus stopped on the face brick of the office building. It was not apparent at the time, but as cold weather commenced in October 1983, it became evident that a major delay in the progress of the office building would result. The delay in the construction of the face brick on the office building imposed a delay in the cleaning of completed brick work. Since cleaning cannot occur in temperatures below freezing, the initial delay became lengthened. Furthermore, the cleaning and thorough rinsing of brick must precede the installation of windows, due to the danger of damage to metal window frames from the cleaning solution. Delay to the installation of the windows prevented closing of the lower floors. Delay to the closing of the structure led to delay in installation of interior wall linings, finishes, and other elements of the construction."

The milestone slippages, illustrated in table II.1, are based on data supplied by FBO project officials.

Table II.1: History of the Soviet Contractor's Construction Progress on U.S. Embassy, Moscow

Unit	Master Schedule				Total months from originally planned to actual completion
	Original start	Original completion	Actual start	Actual completion	
Housing 1	4/80	10/83	1/80	6/86	31
Housing 2	1/80	12/83	1/80	6/86	30
Housing 3	12/79	10/83	7/80	8/86	33
Housing 4	11/79	3/83	2/80	10/86	43
School & Marine quarters	1/80	3/83	2/80	12/86	45
Concourse	11/79	3/83	2/80	2/87 ^a	47
Consulate	1/80	8/83	5/80	2/87 ^b	42
New office bldg.	10/79	4/83	12/79	Unknown ^c	Unknown
General site	2/80	10/83	12/79	5/87 ^d	43

^aThe post accepted the concourse area in December 1986

^bThe consulate will not be occupied until the new office building is completed

^cConstruction was suspended on August 17, 1985

^dGeneral site includes complex underground utilities, brick fence, concrete piles, and landscaping. Only landscaping remains to be completed

the Soviet claim, FBO indicated that (1) the windows were available for installation when the walls were ready for the windows and (2) the metal stairs could not be manufactured until the actual dimensions of the Soviet construction could be determined from the in-place Soviet precast concrete structural system.

FBO officials conceded that there were late deliveries of some U.S.-source materials and lapses in coordination of work of the Soviet and U.S. contractors. However, they pointed out that most U.S. material was supplied according to the original master schedule and the contract terms, but because of Soviet delays, much of the material had to be stored in Moscow for a long period before it could be installed.

FBO described Moscow as "a most difficult construction environment." The logistical pipeline to Moscow is long and variable and is affected by such elements as weather, importation hindrances, labor strikes, and damage. The simplest construction materials readily available on the open market in other countries are not available in Moscow. Logistical planning requirements are unusually detailed and complex. U.S. contractors were required to estimate total requirements to accomplish an activity down to nails, screws, and washers, recognizing high pilferage and long leadtimes to replace.

The contract with SVSI limited FBO to nine on-site supervisory personnel. Sometimes fewer than nine were on site. As few as five professionals were on site during the 1980-81 time frame when a transition from U.S. contractor personnel to Army Corps of Engineers personnel occurred. Thus, the staff was required to accept responsibility for more than their normal functions.

On August 17, 1985, the FBO on-site Acting Project Director directed the Soviet contractor to suspend all work on the new office building. The Soviet construction contract for all work in the interior of the office building was subsequently terminated on March 3, 1986. This termination notice, however, did not preclude the Soviet contractor from completing contractual obligations on the other parts of the project.

Quality Assurance at U.S. Embassy

During construction, various quality assurance techniques were employed. U.S. government construction specialists and private contractors now generally agree that although some remedial work remains to be done at the new office building, the U.S. embassy project is basically sound from a structural standpoint.

appropriate actions. FBO officials in Washington advised us that U.S. leverage with SVSI to achieve contract compliance was inadequate. They felt that U.S. leverage had been substantially diminished long before the construction contract was signed in 1979. They said that the March 1977 protocol permitting the Soviets to begin construction of its complex in Washington and occupy their new quarters in 1979 significantly reduced leverage that otherwise could have been exerted by U.S. construction management.

FBO officials stated that at times the Soviet contractor would not send the appropriate number of laborers to the job site as requested by FBO, but they were observed at other nearby construction sites. FBO on-site officials felt they had no leverage to insist that the Soviets promptly comply with contractual agreements, which was a prime reason for their frustration. One FBO project director began withholding monthly progress payments from the Soviet contractor; however, State officials in Washington told him to discontinue that practice because the contract provided for invoicing by the Soviet contractor based on satisfactory work accomplished. State officials believed that withholding payment for properly accomplished work to create leverage to achieve other work would violate the contract payment provision.

According to FBO monthly progress reports, the absence of some U.S.-supplied materials was also delaying ongoing work. For example, a July 1982 progress report stated that a U.S. contractor's failure to meet delivery dates for windows, doors, and frames was among the factors delaying work on two housing units. An August 1985 progress report indicated that the Soviet contractor was reluctant to supply requested labor because U.S.-supplied materials were not on hand. This report also noted that a few Soviet-supplied materials were not on hand. FBO officials asserted that the major portion of U.S. materials was on-site far in advance of need and that most of U.S. supply items that were late could not be fabricated until the actual dimensions of the Soviet construction were available or had to be shipped to replace materials the Soviets could not supply.

The Soviet contractor indicated that some construction delays resulted from the inability of U.S. contractors to meet supply deadlines. For example, the Soviet contractor stated that the delays in the supply of windows caused setbacks as much as 15 months in the schedule; the lack of waterproofing materials caused about 2 months delay on roof construction for two housing units; and a 19-month delay was experienced because metal stairs were not supplied on time. In response to

- FBO officials said that during construction, the project director was in daily contact with FBO Washington through a direct telephone line and a telecopier and when necessary through cables.
- Videotapes were made to document the project status, and FBO management periodically conducted on-site visits to review the project.

According to two former FBO project directors, Soviet work that was not done in accordance with the contract or FBO requirements was not accepted until the work was fully corrected or redone to FBO's satisfaction.

FBO was not responsible for security related matters in the construction of the embassy complex. Navy Seabees were in Moscow to provide security construction support; to detect and report any unusual behavior or deviations from normal construction techniques; and to preclude the introduction of clandestine listening devices, conduits, or channels that could provide a technical penetration of sensitive working areas. The Seabees reported to the State Department's on-site security engineering officer, not to FBO officials. The Seabees were not considered project managers and did not supervise local contract employees. The security engineering officer on site was responsible for coordinating the security program related to construction with FBO officials.

Several studies have been made on the quality of construction in the new office building. For example:

- In January 1987, the U.S. firm that provided the architectural and engineering services for the embassy complex in Moscow conducted a field survey of the structural aspects of the office building. This survey did not offer an in-depth qualitative evaluation of the structural aspects but indicated that the supporting structure was generally well constructed and that there did not appear to be any major construction defects. The survey did note a number of minor problems and unfinished structural details and recommended that the incomplete work be finished as soon as possible.
- An engineering consulting firm's interim report to FBO dated February 1987 concluded that the new office building "has a well founded, rugged, heavy duty frame, well constructed from a basic structural perspective and performing very well." Progress was prematurely interrupted, and it was apparent that many details of construction remained to be completed. However, the report states that the incomplete and defective work does not affect the structural integrity of the building in its present condition.

Quality assurance as it relates to security concerns was handled separately from construction quality. FBO representatives stated that construction personnel and project engineers inspected all phases of construction at the U.S. embassy in Moscow. Routine inspection reports were prepared, field tests were made, and a formal compliance system was used to notify the Soviet contractor of problems. FBO representatives stated that quality assurance practices were carried out by experienced engineers and construction personnel.

FBO's on-site team initially consisted of the project director and a structural engineer plus U.S. contractor mechanical, architectural, and electrical engineers; a structural engineer/coordinator; and a logistic scheduler. In early 1981, Army Corps of Engineers construction specialists—mechanical, architectural, and civil engineers and a logistic scheduler—joined the on-site team under a 1980 memorandum of understanding between the Departments of State and Army. The Corps of Engineers personnel replaced the U.S. contractor personnel. In early 1982, a construction field representative was added to monitor overall construction progress.

From March 1978 to November 1985, except for a 14-month lapse, the project director furnished the FBO contracting officer monthly progress reports on construction performance. From July 1980 through October 1981, no monthly progress reports were prepared. These reports are required under FBO procedures to provide a formal detailed statement of the status and results of activities during the month. However, according to FBO, the size of staff on-site during this 14-month period was not sufficient to prepare them because of the transition from contractor personnel to Corps of Engineer personnel. No monthly progress reports have been prepared since November 1985 because the work at the new office building was suspended in August.

Other means were also used to alert key people to construction problems:

- A contractor compliance notice system was implemented in 1981 as a method to formally notify the Soviet contractor of problems and to obtain the contractor's written acknowledgement. The compliance notice form replaced a letter format used since construction had begun. FBO advised us that except for notices applicable to the office building (which the Soviet contractor did not correct due to the suspension of work), most of the corrective actions have been completed.

Appendix II
U.S. Embassy Project Suffers Delays and
Increased Costs

In August 1984, the Soviet contractor submitted a claim for 2.75 million rubles (about \$4.3 million⁶) against FBO for its unwillingness to carry out contract obligations in a timely manner. The claim asserted U.S. delays in providing materials and the failure to approve working drawings in accordance with the master schedule. In April 1986, the Soviet contractor increased its claim to 6.55 million rubles (about \$10.3 million).

On April 22, 1987, the Soviets acknowledged receipt of FBO's claim for defective work at the new office building, raised various contractual objections, and rejected the claim, saying it was unsubstantiated and lacked the proper documentation.

According to FBO, many U.S. government claims involving U.S. contractors were settled during the construction period and are reflected in contract modifications. FBO pointed out that potential claims that cannot be fairly assessed during construction are withheld until work is completed and the entire impact of extra costs, if any, can be analyzed. Generally contractors are placed on notice of a pending claim, and the notice will frequently result in contractor action that may obviate implementation of a formal claim. As of May 1987, FBO was analyzing a list of potential claims against U.S. contractors and emphasized that other potential claims may evolve as contracts are completed. FBO had no financial estimates for many of the potential claims.

⁶This amount is based on the 1987 exchange rate. One ruble is equivalent to about \$1.56.

-
- In April 1987, the National Bureau of Standards completed its structural analysis of the new office building and concluded that the structural materials and components used are generally of good quality, but deficiencies were found in the structure that should be corrected for adequate safety before the building is occupied. This study noted that, while important, the deficiencies in comparison to the total structural system for the building are modest in scale and fully correctable. Some deficiencies related to incomplete work, and others related to measures needed to improve the floor system's resistance to progressive collapse.⁴

The Bureau stated that the remedial structural measures related to serviceability and durability do not involve major reconstruction and could be completed in less than a year—if the building were in the United States—at an estimated cost of about \$1.5 million based on Washington, D.C., prices. The Bureau also pointed out that (1) actual costs for remedial structural measures would depend on working conditions in Moscow and the means selected for performing the work and (2) its estimate did not include the costs of correcting any nonstructural deficiencies or addressing security concerns.⁵

U.S. and Soviet Claims

On February 1, 1984, FBO submitted a claim for \$1,044,838 against the Soviet contractor for compensation of damages, costs, and expenses accruing to FBO as the result of the Soviet contractor's delays in construction. In 1985 and 1986, FBO increased the amount. This claim now totals about \$8.6 million and is expected to increase in the near future to about \$20 million. In March 1987, a preliminary claim was submitted for about \$3.3 million for damages related to defective work on the new office building. In April 1987, FBO submitted a claim for latent defects and other defective work and materials supplied by the Soviet contractor with respect to portions of the U.S. embassy complex other than the office building. The costs are to be determined later when FBO can make the proper assessment.

⁴FBO officials advised us that the principle of progressive collapse has recently evolved and was not a concern when the Moscow complex was designed. They also said corrective action would not be difficult.

⁵FBO officials advised us that the "remedial" work had been identified and demands had been made to the Soviet contractor to correct such work, but the Soviets failed to make the corrections by the time work was suspended and the Soviets were prohibited from reentering the building in August 1985. Since the work was unacceptable, no payment has been made.

FBO Guidance for Future Projects

FBO officials have stated that certain considerations need to be addressed before entering into future construction agreements and contracts with other countries like the Soviet Union. These issues include (1) the use of only U.S. workers with the proper security clearances; (2) prearranged custom clearances to allow free flow of materials and avoid unnecessary delays; (3) construction agreements developed by experienced construction personnel; and (4) reasonable stopping points to control construction progress and to ensure effective reciprocity. In February 1987, the State Department issued internal guidance to help ensure that problems experienced in the construction of the U.S. embassy in Moscow will not happen again.

U.S. Control Over Construction of Soviet Embassy

The Soviet Union was able to erect embassy buildings in Washington faster than the United States could build its embassy complex in Moscow. A State Department document indicates that this occurred in part because the Soviets did not have to face the series of bureaucratic hurdles and delays that U.S. officials faced in Moscow. According to one State Department official, the U.S. government did not interfere with U.S. contractors building the Soviet embassy. The Soviets selected their contractors from competitive bids, and the contractors were free to obtain goods and services from any source; the State Department did not get involved in construction schedules.

In 1985, U.S. contractors completed their work on the Soviet embassy and Soviet workers were doing the interior finishing work. Since then the State Department has been implementing controls and restrictions on all procurements of U.S. goods and services for the Soviet embassy.

Pursuant to the Foreign Missions Act of 1982 (22 U.S.C. 4301 et. seq.), the Secretary of State decided in May 1985 that it was "reasonably necessary on the basis of reciprocity or otherwise" for the Soviet Union to acquire construction supplies and services for its embassy in Washington through the State Department. The State Department's Office of Foreign Missions began controlling the purchase of construction goods and services for the Soviet embassy in July 1985. This effort was designed to bring U.S. practice regarding the provisions of goods and services for construction projects into line with Soviet procedures. This ended the Soviets' ability to purchase freely on the U.S. economy.

The State Department advised us that (1) before the passage of the Foreign Missions Act (which was effective in 1983), the Department could not legally regulate the activities of U.S. contractors and (2) by the time the act was passed, U.S. contractors had substantially completed any work at the Soviet embassy project that could be regulated.

On April 27, 1987, the State Department issued a diplomatic note to the Soviet embassy saying that the Office of Foreign Missions would no longer enter into contracts or purchase agreements on behalf of the Soviet embassy for the purchase of U.S. goods and services for the new Soviet embassy complex. The Department now requires the Soviets to import their remaining project requirements. In addition, the State Department reiterated that the Soviets will not be allowed to occupy their new chancery office building until the United States occupies its new office building.

Comparison of U.S. and Soviet Embassy Projects

This appendix provides some comparison between the construction of the Soviet embassy in Washington and the U.S. embassy in Moscow. Table V.1 illustrates a timetable comparison between the U.S. and Soviet projects. Table V.2 provides a general comparison of the scope of the nature of the Soviet and U.S. projects. (See fig. V.1 for an architectural drawing of the U.S. project.)

Table V.1: Timetable Comparison of Key Events Related to Soviet and U.S. Embassy Projects

Soviet embassy	U.S. embassy
1969	Agreement on site
1972	Agreement on construction conditions
1977	Sign contract and begin construction
1979	Occupy housing units, school, auditorium, and recreational facilities
1985	Work by U.S. contractor completed for Soviet consulate, reception hall, and chancery, interior to be done by Soviets.
N/A	United States stopped Soviet work on U.S. chancery office building
?	Simultaneous occupancy of chanceries

Table V.2: Description of U.S. and Soviet Projects

Description	U.S. embassy complex	Soviet embassy complex
Overall size	738,846 square feet enclosed	545,000 square feet enclosed
Housing	134 units	175 units
Classrooms	Nine	Eight
Guard quarters	24 bedrooms, kitchen, dining room, lounge	Not applicable
Community	Cafeteria, commissary, warehouse, parking, swimming pool, gym, bowling alley, squash and handball courts, bar, lounge, infirmary, etc.	Swimming pool, gym, parking, club, infirmary, recreational facilities, etc
Consulate	Offices, auditorium, library	Offices, auditorium, library
Office building	Eight floors plus basement and penthouse	Eight floors plus basement and penthouse
Reception hall	First floor of office will be the reception hall	Banquet rooms, ballroom, ambassador's quarters

Authorized Expenditures for the U.S. Embassy Project in Moscow

According to FBO, about \$146 million has been obligated, of which about \$137 million had been expended for the U.S. embassy project in Moscow as of March 31, 1987. Table IV.1 represents FBO's accounting of the amount spent by major category.

Table IV.1: State Department Construction Expenditures for the U.S. Embassy Project in Moscow (As of March 31, 1987)

Category	Amount spent (millions)	Amount spent (percent)
Direct construction	\$101.8	74
Salaries—staff	9.0	7
Architectural design services	7.4	5
Transportation, construction supplies	6.9	5
Construction-related equipment, supplies, and services	4.7	3
Other contracts and purchase orders	2.0	2
Housing and office space for construction personnel	1.6	1
Furniture	1.6	1
Administrative expenses	.9	*
Travel—staff	.8	1
Miscellaneous expenses	.1	*
Total	\$136.8	100

*Less than one percent

Note. Expenditures include security related expenses, such as technical conference rooms, gatehouses, telephone systems, in-transit material guard protection, and the security study of the new office building.

Comments From the Department of State



United States Department of State

Comptroller

Washington, D.C. 20520

August 20, 1987

Dear Ms. McCabe:

I am replying to your letter to the Secretary which forwarded copies of the GAO draft report entitled "U. S. Embassy Moscow: Why Construction Took Longer and Cost More Than Anticipated" for review and comment.

Enclosed are the Department's comments which were prepared in the Bureau of Administration.

We appreciate the opportunity to review and comment on the draft report.

Sincerely,

A handwritten signature in black ink that appears to read "Roger B. Feldman".

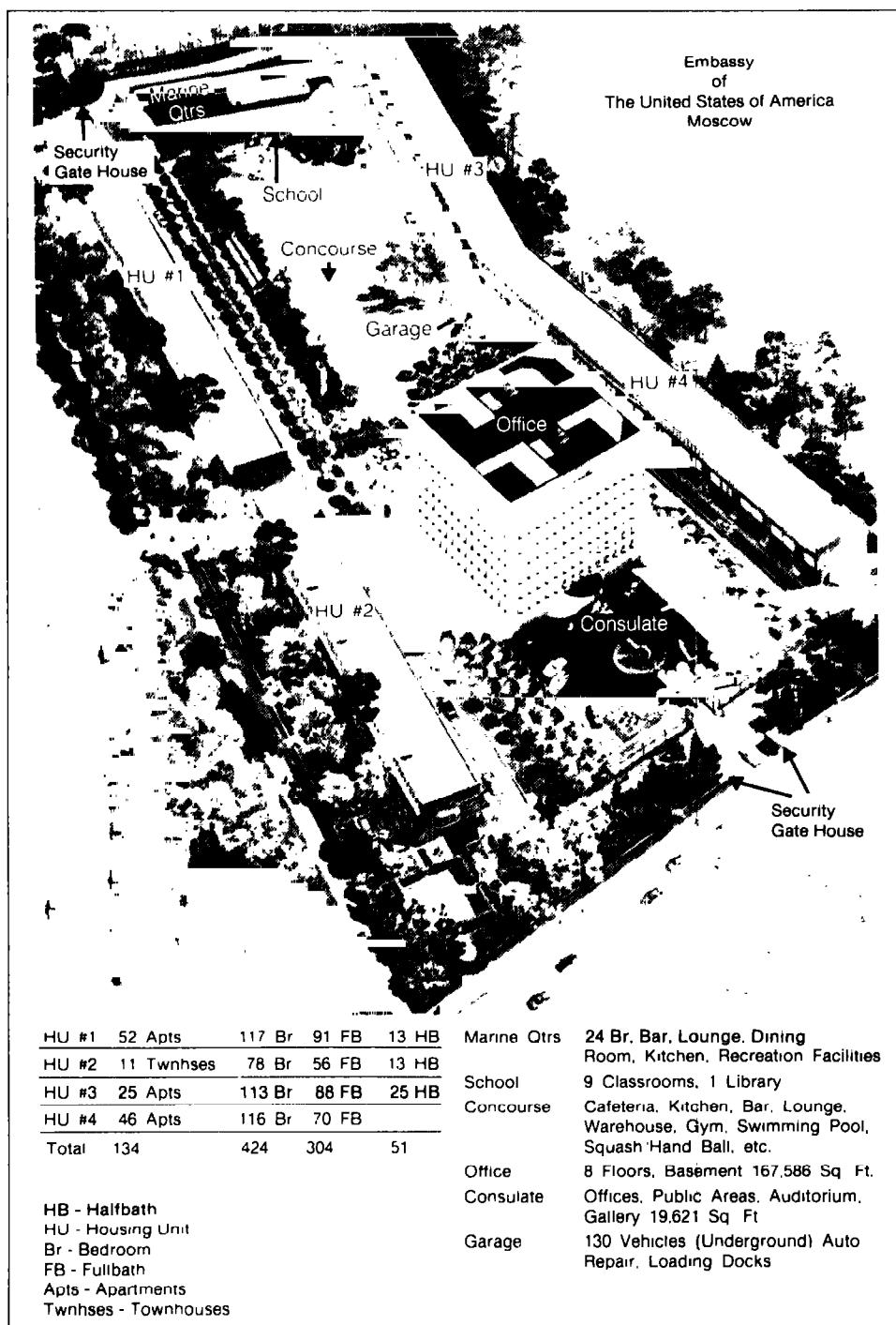
Roger B. Feldman

Enclosure:
As stated.

Ms. Joan M. McCabe
Associate Director,
National Security and
International Affairs Division,
U. S. General Accounting Office,
Washington, D. C. 20548

Appendix V
Comparison of U.S. and Soviet
Embassy Projects

Figure V.1: Architectural Drawing of U.S.
Embassy Complex in Moscow



Appendix VI
Comments From the Department of State

-2-

The problems of coordination of Soviet and American work were exacerbated by Soviet malperformance such as: non-compliance with schedule sequencing of work, inflexibility in assignment of labor to specific work areas; inadequate supply of labor to meet work requirements; non-compliance with design tolerances requiring rework or redesign and reacquisition of materials and non-availability of specified materials. It was only because of A/FBO coordination of work activities under unusual and difficult circumstances that seven of the eight buildings were completed pursuant to design intent. The eighth building (office building) would have been similarly completed except for the security issue.

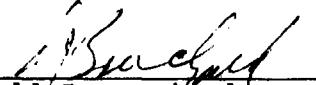
Now on p 21

See Comment 3.

Page 29 of Draft, last paragraph:

During the period of site and foundation work, fewer professional disciplines were required. The existing staff of five professionals plus clerical support was capable of handling all required functions.

We appreciate the opportunity to review and comment on the draft report.


Donald J. Bouchard
Assistant Secretary for
Administration

DRAFT REPORT COMMENTS: U.S. EMBASSY MOSCOW: WHY CONSTRUCTION TOOK LONGER AND COST MORE THAN ANTICIPATED"

We are pleased to comment on the GAO draft report B-226595 received on August 7, 1987.

Our comments follow, keyed to the applicable page number and paragraph of the draft report.

Now on p. 2.

See Comment 1.

Now on pp. 5 and 26

See Comment 2.

Now on p 21

The implication that the difference between \$75 million to \$100 million and \$192 million was caused by timetable slippage is not entirely accurate. GAO Report NSIAD-87-125BR of April 1987, Page 16, reports that A/FBO estimates dated November 1978 and July 1979 document the total estimated cost of the project at \$129 million. The Congress appropriated an additional \$36.7 million for security enhancement and \$20.1 million for anticipated extra cost due to Soviet delay.

Page 9 of Draft, second paragraph and Page 36, second paragraph:

Prior to passage of the Foreign Missions Act (which was effective in 1983), the Department could not legally regulate the activities of U.S. contractors. This was a concern which was amplified in the administration's support for passage of the act. By the time of passage of the act, the Soviet project was already mostly completed with respect to any work by American contractors that could be regulated.

Page 23 of Draft, last paragraph (bullet only):

The logistical pipeline to Moscow is long and variable and is affected by such elements as weather, importation hindrances, labor strikes and damage. The simplest construction materials such as nails and screws that are readily available on the open market in other countries are not available in Moscow. Logistical planning requirements are unusually detailed and complex. Despite such problems, U.S. construction materials were generally available when required and had minimal if any impact on delay of the project. Due to the long lead time and variable conditions, most of the U.S. material was in Moscow for installation pursuant to the original master schedule and, because of Soviet delays, had to be stored for a long period of time before it could be installed.

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GAO Comments

The following represents GAO's evaluation of the State Department comments.

1. We have revised the text to show that the extra costs were not entirely related to timetable slippage. It should be noted, however, that our April 1987 report shows that despite these internal State documents, the Department of State advised the Congress in its annual budget justifications for fiscal years 1977 through 1979 that \$91.5 million would complete the project.
2. This information has been added in the text.
3. This was the largest project ever undertaken by FBO, the number of FBO supervisory personnel was already limited by the contract, and the project was already experiencing delays. During this period, none of the required FBO monthly progress reports were prepared. According to an FBO document, no planner/scheduler/logistics manager was on site to prepare them because of the transition from contractor personnel to Corps of Engineer personnel.

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