A Status Report to Congress on

The Renovation of the Pentagon

Prepared by
The Office of the Secretary of Defense

March 1, 2003

Annual Status Report to Congress 13th Edition
March 1, 2003

This report is provided to the Congress in compliance with Title 10 United States Code, Section 2674. This requires the Secretary of Defense to submit an annual report on the status of the renovation of the Pentagon Reservation, and a plan for the renovation work to be conducted in the fiscal year beginning in the year in which the report is transmitted.

This is the thirteenth annual report submitted in compliance with 10 USC 2674. The report covers accomplishments to date and actions proposed for FY 2003. In addition, information is included on several related projects which support the overall objectives of operations and maintenance of the Pentagon Reservation.

MESSAGE FROM THE PROGRAM MANAGER

The energy and attention given to the Phoenix Project following the September 11 terrorist attack cast a wide shadow over the numerous other projects managed by the Pentagon Renovation Program. Our goal of occupying the E-ring of the damaged Pentagon by September 11, 2002 produced a spirit, energy and fervor rarely seen on any construction project. Everyone – from engineers, project managers and the tenants to carpenters and electricians put in thousands of man hours and made personal sacrifices to not only accomplish – but exceed this goal. Thanks to the Herculean efforts of all involved, the first Pentagon employees moved into their E-ring offices on August 15, 2002, a full 28 days ahead of schedule. We will always look back with pride at the Phoenix Project. It is a symbol of the great things that sweat, patriotism and teamwork can accomplish. But I think that what truly makes PENREN special is our refusal to let any of our other renovation projects suffer while achieving our goal.

In November 2002, we held a grand opening for the Metro Entrance Facility (MEF). This project experienced a one-month construction interruption due to security concerns around the Pentagon. Despite this delay, the project opened on time. With the MEF, the Pentagon now has a facility that provides a welcoming "front door," while greatly enhancing building security.

Work on Wedges 2-5 continues on schedule, despite being directly impacted by the 9/11 attack. The entire renovation was re-phased to include not only space recovery, but also to return 500,000 square feet of space to Pentagon personnel to undertake the planning and execution of the global war on terrorism. Working on a schedule that has now been advanced by four years, the W2-5 team has developed an innovative "assembly line" renovation technique called a Short Interval Production Schedule (SIPS). New "smart wall" technology has enabled us to quickly layout Pentagon offices, while making it easy for building tenants to make changes to their spaces as dictated by changes in their mission.

In 2002, we completed work on the Remote Delivery Facility power plant. We are also making progress on the new Pentagon Athletic Center, which will be open to employees in December of 2003. Our Roads, Grounds and Security (RGS) projects are underway. Work has already begun on the Pentagon Secure Bypass, which involves rerouting Route 110 further away from the Pentagon. The RGS team will also be building a Remote Delivery Facility Secure Access Lane.

Our success as a program has garnered us numerous awards for project management and construction as well as acquisition and contracting methods. More importantly, innovations and lessons learned from 9/11 have caused the Department of Defense to call on the Program for assistance in activities other than the renovation of the Pentagon. PENREN's responsibility has evolved in many areas – one being to ensure the Department of Defense has the capability to carry out its mission by having redundant and survivable systems. For example, the Command Communications Survivability Program (CCSP) provides dispersion and multiple points of presence for selected, vital command communications systems to enhance survivability from attack. PENREN was tasked with taking requirements to reality and, given the critical nature of the requirements, completing the effort on a very aggressive schedule. In accomplishing this task, the Integrated Project Team, with members from not only PENREN but also the Information Technology Agency and virtually every military service and agency in the Pentagon, identified the need for smart technology with the capacity to route command communications systems around a breach from attack in the areas of voice, data, network and messaging.

In another area, PENREN was called on to support the Department's transformation initiative of furthering the concept of interoperable and joint operations across all military departments. PENREN was engaged by the senior leadership to conceptualize the vision of how the military departments and the command center could better function together in support of the Secretary and Chairman of the

Message from the Program Manager

Joint Chiefs during normal, crisis or wartime situations. PENREN's Unified Command Center concept stresses "jointness" and interoperability while still taking into consideration the unique missions of each of the military services. Additionally, PENREN has the responsibility of accomplishing assessments, making recommendations and implementing facilities and information technology improvements to ensure capabilities are in place in support of continuity of operations, business and government.

Much like the Department of Defense, the Renovation Program is examining the merit of outsourcing functions in order to most efficiently complete tasks and projects. We realize the benefit of a diverse organization and shared leadership among military, federal government and contractor personnel. As an organization, PENREN will continue to reassess its staffing to ensure resources are appropriate to support Pentagon operations "*On Cost, On Schedule and Built for the Next Fifty Years.*"

The past year has been one of transition, challenges and triumph. Our former Program Manager, Lee Evey, retired from Government service shortly after September 11, 2002, leaving a legacy of excellence behind. As with any transition in leadership, the Program will undergo certain changes. This change will benefit the Pentagon Renovation Program in several ways. However, this does not give us the liberty to slow down or change how we accomplish our job every day. We will not change our attitude and practice of being the best at what we do. We will not change our relationships with Pentagon tenants, services and agencies because it is paramount that we are the non-parochial mediator in managing the renovation and ensuring everyone gets treated fairly. We will not change our organizational structure, policies or processes or change our approach to providing a quality product while balancing congressionally mandated cost and schedule requirements. We will remain the Pentagon Renovation Program!

Then Deputy Program Manager Michael R. Sullivan addressed the audience at the Worker Appreciation Ceremony, held at the Phoenix Project site on September 11, 2002.

Michael R. Sullivan
Program Manager

EXECUTIVE SUMMARY

As required by Section 2674 of Title 10, United States Code, the attached status report to Congress on the renovation of the Pentagon is presented annually. This is the thirteenth report. This report is a synopsis of the Pentagon Renovation Program, the work completed during the past fiscal year and the work anticipated for the next twelve months. In addition, this report reviews the design and construction costs-to-date within the framework of the overall certified summary. The following four sections are covered in detail.

I. PROGRAM OVERVIEW

Since 1943, the Pentagon has never undergone a major renovation and, as a result, it is unable to meet the daily demands placed on it by current tenants. All of the Pentagon's major utility systems need to be replaced, a process which is complicated by the presence of asbestos and other hazardous materials, and the need to work around fully occupied space - 20,000 people who cannot afford interruption in their daily operations.

In addition to renovation activities, an impetus was placed on the need for security improvements as a direct result of the ever-growing threat of terrorism and the attack on September 11, 2001. To meet these threats, the Renovation Program has been tasked with projects outside of its original scope of work, such as the Remote Delivery Facility , Metro Entrance Facility and Roads Grounds & Security Projects. Other security-related enhancements are incorporated within renovation work activities.

In addition to repealing the previous certification requirement of $1.22 billion, Congress provided for the transfer of $300,000,000 to the Pentagon Reservation Maintenance Revolving Fund (Sec. 305(b), P.L. 107-117, Jan 10, 2002) to finance accelerated Pentagon renovation completion by up to four years and to make command centers more secure. As a result, the renovation of the Pentagon is expected to be complete in 2010, accelerated from the previous schedule of 2014.

All of the projects undertaken by the Renovation Program follow a similar renovation sequence; tenant move-out; the installation of temporary mechanical, electrical, plumbing, and communications; demolition and abatement of hazardous materials; core and shell construction; tenant fit-out construction; information management and telecommunications; furniture installation; security verification; commissioning; and tenant move-in.

Beginning in FY 2000, commissioning and acquisition and installation of post renovation furniture was programmed and budgeted as a non-renovation expense, within the Facilities Operations Program as reflected in the Congressional Budget Justification package.

II. WORK IN PROGRESS

All of the work accomplished in 2002 and planned for 2003 is described in detail in the Work In Progress section. The Phoenix Project, encompassing 400,000 square feet of space, is the reconstruction of the areas in Wedge 1 and Wedge 2 that suffered structural damage as a result of the September 11 terrorist attack. Wedge 1 was five days away from completion, when the attack damaged nearly the entire million square feet, and is in recovery. The contract was awarded for the renovation of Wedges 2 through 5 on September 14, 2001. A significant portion of Wedge 2 suffered severe damage due to the attack as well. The scope of Wedge 2 was re-phased to respond to the immediate need for office space to continue the planning and execution of the global war on terrorism. The other half is currently under renovation. The need for swing space will be a continuous challenge, especially with the advanced renovation schedule. Demolition and abatement work is complete in Segments 2 and 3 of the basement and mezzanine. Construction is currently underway in some basement areas while planning continues to determine the best use of the remaining space.

The Metro Entrance Facility Project was completed on November 21, 2002. Condenser Intake and Outfall Lines are ancillary to the Renovation Program but tie into the operation of the Heating and Refrigeration Plant.

III. PROCESS IMPROVEMENTS

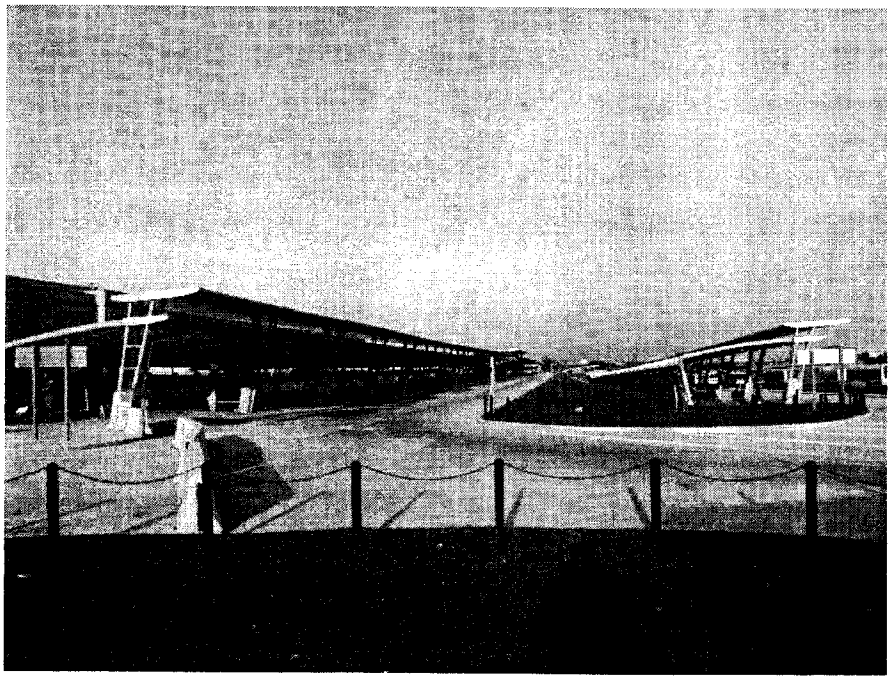
The Renovation Program is constantly evolving and developing better ways of doing business. This section highlights the Program's efforts in the areas of force protection, acquisition, commissioning, the tenant move process and Program Management.

Force protection improvements include the integration of lessons learned from the terrorist attack and the implementation of improvements to fire and life safety systems. The 9/11 attack has also highlighted the need for two new IT initiatives, the Command Communications Survivability Program and Alternate Sites for Continuity of Operations and Continuity of Business. PENREN has been tasked by DoD to implement both of these initiatives. The Renovation Program's acquisition process continues to be at the forefront of acquisition reform and continues to change the way the federal government and industry does construction business. This is complemented by commissioning practices that ensure tenant satisfaction and maximize systems efficiency. Interaction with Pentagon tenants and the integrated approach to program management stretch across all aspects of the Renovation Program.

IV. APPENDICES

The appendices include a glossary of terms used throughout this report for easy reference. A timeline of projects completed prior to the scope of this report is also included. As required by the Fiscal Year 2000 Authorization Bill, Section 2881, a description of the use of the Navy Annex property is included.

The Renovation Program has been recognized during the past year for the importance of its work and innovative practices. The appendices include a sample of the media recognition and political interest the Program has received. Finally, important contact information is provided for those interested in learning more about the Pentagon Renovation Program.



The Metro Entrance Facility Project, a security-driven initiative, was completed in November 2002. The MEF ***1)*** *moves vehicular traffic away from the face of the building and* ***2)*** *increases security by screening vistors and Pentagon personnel in a facility that is located outside of the Pentagon.*

PENTAGON
RENOVATION
PROGRAM

ON COST, ON SCHEDULE, BUILT FOR THE NEXT 50 YEARS

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I. Program Overview

An aerial view of the Pentagon Reservation, taken on September 7, 2002, less than one full year after the terrorist attack on September 11, 2001. The photo illustrates the completed structure of the Phoenix Project (circled).

I. PROGRAM OVERVIEW

Program Background

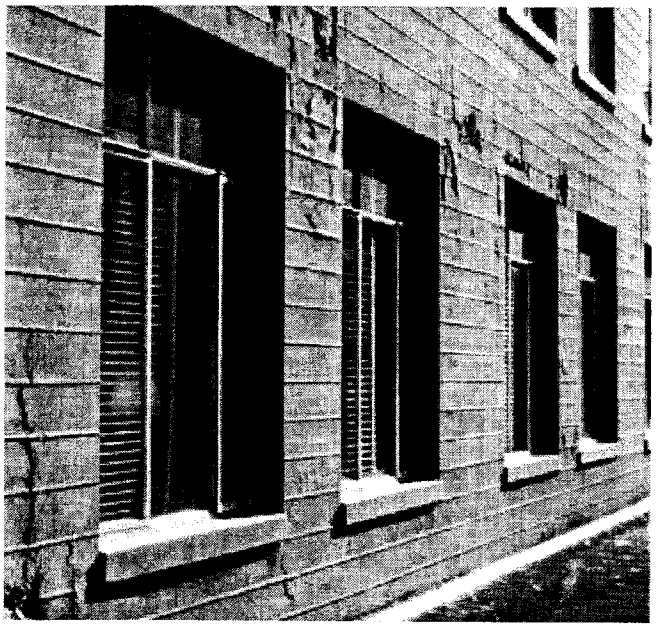
Program Schedule

Program Budget

Renovation Sequence

PROGRAM BACKGROUND

Vertical mobility and ADA compliance is a major challenge faced by tenants in the unrenovated sections of the Pentagon. Many people with disabilities are forced to use freight elevators to access the upper floors of the building.



In addition to improving the appearance of the building facade, the Pentagon Renovation Program is installing new, energy efficient windows. The old windows contribute to a 30% energy loss in the unrenovated parts of the building.

THE NEED

The Pentagon, designated as a National Historic Landmark in 1992, has never undergone a major renovation, and after more than 59 years, renovation is essential in order to meet current health, building, ADA, fire, and life safety codes, and provide reliable electrical, air conditioning and ventilating services. Absent a major renovation, the building infrastructure has become increasingly unreliable and unable to fully support the headquarters and nerve center of the national military establishment. Major building engineering systems have deteriorated to such an extent that repairs are no longer effective and entire systems need replacement. The presence of asbestos in the ceiling plaster, heating and ventilating ducts, pipes, and floor coverings is a hazard that makes repairs or alterations extremely disruptive and expensive.

From 1982 through 1990, the Department of Defense discussed with the General Services Administration (then owner of the building) renovation of the Pentagon and, in the mid 1980's, GSA supported the concept of transferring ownership of the building to the Department of Defense in order to proceed with the much needed renovation.

THE TRANSFER

Based on consultation within the Administration and with Congressional committees, legislation was prepared to transfer ownership of the Pentagon from the Administrator of General Services to the Secretary of Defense so that the renovation of the Pentagon could be undertaken.

The Defense Authorization Act of FY 1991 transferred control of the Pentagon Reservation from the Administrator of General Services to the Secretary of Defense. Under the same Act, Congress established the Pentagon Reservation Maintenance Revolving Fund for the expressed intent of renovating the Pentagon, allowing the Secretary of Defense to establish rent rates which support the renovation.

THE PROGRAM

In 1990, a concept plan for the Pentagon Renovation was approved based on renovating the building in five 1,000,000-gross-square-foot "wedges" with renovation of the basement as a separate endeavor. The plan envisioned the complete removal of all mechanical, electrical, and plumbing systems down to the base structure due to the widespread presence of hazardous materials and the high probability of systems failure.

The Renovation Program is providing all new engineering systems, vertical transportation, IM&T, lighting, and fire and life safety systems.

The renovated Pentagon will provide accessibility for persons with disabilities. It will preserve historic elements, upgrade food service facilities, construct strategically located operation centers, install modern telecommunications support features, comply with energy conservation and environmental requirements, reorganize materials handling, and provide safety improvements in vehicular and pedestrian traffic.

The renovation concept for the Pentagon included, as a first phase, a new Heating and Refrigeration Plant, which has been completed and is operational. In conjunction with the construction of the Heating and Refrigeration Plant, a Center Courtyard Utilities Tunnel was constructed. The tunnel houses various utility lines which will distribute building utilities provided by the new plant.

The second phase of the Program was the renovation of Segment 1 of the Basement and Mezzanine, which started in September 1994 and was completed with the opening of the DiLorenzo TRICARE Health Clinic in March 2000. The third through seventh phases of the Program were envisioned as the renovation of the five wedges of the building from the first to the fifth floor. These areas were determined to be the optimum divisions for renovation while continuing the operation of major utility systems. In order to vacate Wedge 1 prior to renovation, tenants were moved either to nearby leased office space, to swing space identified within the Pentagon, or into a previously renovated building area. On September 11, 2001 tenants were in the process of moving out of Wedge 2 into the newly renovated Wedge 1. The terrorist attack and Congressionally mandated acceleration has forced the Renovation Program to re-examine its planned phasing of the renovation to allow Pentagon personnel to continue with the execution and planning of the current war effort.

The Renovation Program is working on several ancillary projects, including the Pentagon Athletic Center. The Renovation Program's organizational team structure, in-house expertise and innovative acquisition practices allow it to take related projects on the Reservation when appropriate. Accomplishing ancillary projects in coordination with renovation activities reduces overall costs by coordinating work efforts.

From September 11, 2001 to September 11, 2002, thousands of workers labored round the clock to complete the rebuilding and recovery of the area that was impacted by the terrorist attack. The two million square feet damaged in the incident was fully recovered by February 2003.

STATUS

A major focus of the Pentagon Renovation Program was the Phoenix Project, the 400,000 square feet of the Pentagon that had to be demolished and rebuilt as a result of the September 11, 2001 terrorist attack. Despite the national spotlight on this effort, the Program never lost its focus on other projects. These projects continued to be on schedule.

The fire, smoke and water damage that resulted from the impact and ensuing fire of the September 11 attack, led to the displacement of 4,500 tenants from Wedge 1 and Wedge 2 collectively. Significant progress has been made to reoccupy Wedge 1. By September 11, 2002, the entire E-Ring of the Phoenix Project was reoccupied and approximately 3,000 tenants had been moved back into Wedge 1.

Wedge 2 was slated for demolition and abatement of hazardous materials in October 2001. However, the events of September 11 led to the re-phasing of Wedge 2 renovation to allow for re-occupancy of approximately half of the wedge to accommodate tenants displaced from the building as a result of the attack. Demolition and abatement are complete in Wedge 2, and construction is nearing completion on the 4th and 5th floors. The first Wedge 2 tenants are expected to occupy their offices in summer 2003.

The Metro Entrance Facility had its grand opening on November 21, 2002. The congressionally mandated Metro Entrance Facility project implements required improvements to physical security by increasing the distances between the Pentagon and buses.

The entrance addition allows direct, above-ground access to the Pentagon from the Transit Center while providing a comfortable and safe entry point for Pentagon personnel. The new entrance screens all visitors and houses the Pentagon Tour and Badge Offices.

The Pentagon Athletic Facility (PAC) - formerly Pentagon Physical Fitness and Readiness Facility - will replace the existing facility with a more spacious, modern facility that meets growing membership fitness and readiness needs based on current usage patterns and future incremental growth. The 120,000-square-foot facility which includes options for an auditorium to replace the current Pentagon auditorium, related television studio and executive motor pool will be located at basement level underneath and adjacent to the Pentagon's Mall Terrace. The PAC will be built in two phases to accommodate the relocation of Pentagon tenants currently occupying a section of the basement, who will not be vacated until late 2003. Phase One construction will be complete and the new PAC ready for use by December 2003.

Phase 1 of the Intake/Outfall project began construction on the intake line in March 2002. The underground intake water line supplies condenser water to the Pentagon air conditioning chillers. The Intake Tunnel line was completed on November 12, 2002.

In November 2001, the Roads, Grounds and Security Team was established with the purpose of providing modifications to the existing network of highway and access roads to meet Pentagon security needs. Work on the Pentagon Secure Bypass Project started in January 2003.

PROGRAM CHALLENGES

A complete renovation of the Pentagon is necessary to provide a modern, flexible, and efficient work environment that will endure well into the 21st century. Without a major renovation, the building will continue to deteriorate, ultimately rendering it unable to serve its mission.

To better understand the challenges the renovation team faces, it is important to understand the unique features of the Pentagon itself. Unlike most large office buildings, the Pentagon is the command and control center for our nation's military establishment and headquarters to the senior leadership, including the Secretary of Defense, the Chairman of the Joint Chiefs of Staff and the heads of each of the armed services. It is from within the Pentagon walls that the Department of Defense monitors and deploys forces around the world. Yet, it is within these same walls that renovation activities, often involving heavy construction, must take place.

In terms of size, the Pentagon looks and operates much like a small city: it has its own heating and refrigeration plant, water and sewage facilities, police force, fire station, heliport, child care center, cafeterias, mini-mall, Metro station, and medical clinic. The building itself covers 34 acres and, overall, the Pentagon Reservation includes parking for 10,000 vehicles. In terms of population, the Pentagon's 25,000 employees make it larger than nine out of ten towns in the U.S. The large number of Pentagon personnel, the complexity and the critical nature of their missions, and the sheer magnitude of the building combine to create challenges that can be found in no other renovation project in the world.

The five historic elements of the Pentagon present further challenges to the renovation effort.

1. The five outer facades of the Pentagon.
2. The center courtyard and surrounding facades.
3. The terrace fronting the Mall Entrance.
4. The terrace fronting the River Entrance.
5. The Pentagon's distinctive five-sided shape.

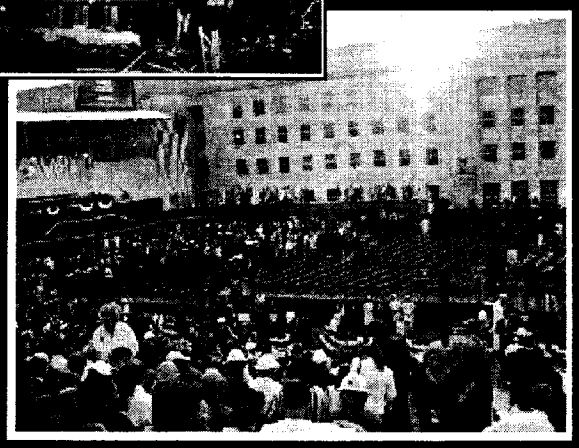
Post-September 11 Challenges

The attack on the Pentagon magnified the already formidable challenges faced by the Pentagon Renovation Program.

The 400,000 square feet reconstructed as part of the Phoenix Project directly impacted the coordination of tenant moves, move-in schedules and the amount of swing space leased around the Pentagon. The attack also resulted in a dramatically increased focus on security by the Program.

Despite the additional challenges, the Pentagon Renovation Program has been successful in moving forward with the project schedule, which calls for completion of construction activities in 2010.

(Left) The Pentagon on September 11, 2001.



People gathering in front of the completed Phoenix Project for the morning commemoration ceremony on September 11, 2002

PROGRAM SCHEDULE

Since last year's report, the Pentagon Renovation Program completed two major milestones: The Phoenix project structure was completed and the new Metro Entrance Facility opened to the public. The Phoenix project, as promised to the American people, was completed with the outside "E" ring populated before the anniversary of the September 11, 2001 terrorist attack. We completed populating Wedge 1 in February 2003. The new Metro Entrance Facility, including the new Tour and Badging offices opened to the public during the month of November.

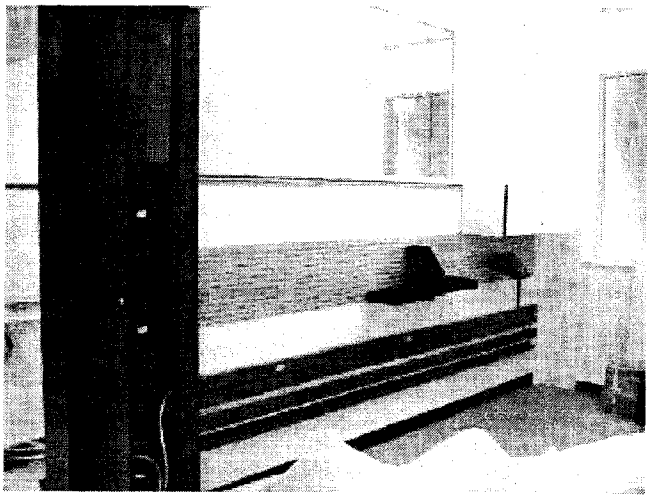
The completion date of the Pentagon Renovation Program, with the support of the Congressional appropriation of funding, has been moved to December 2010. This reflects a four year advance of the Renovation Program's previously estimated completion date of 2014. This time decrease is based on necessity to incorporate force protection measures as soon as possible as a result of the September 11, 2001 terrorist attack on the Pentagon. The recent defense appropriation for 2002 that mandates a completion of the renovation by 2010, allocated funds to support the acceleration.

To facilitate acceleration of program completion, construction in the basement will provide flexible space, suitable for any use, including automated data processing centers, command and control centers or traditional office space. This work started in February 2002 and will be completed by May 2004.

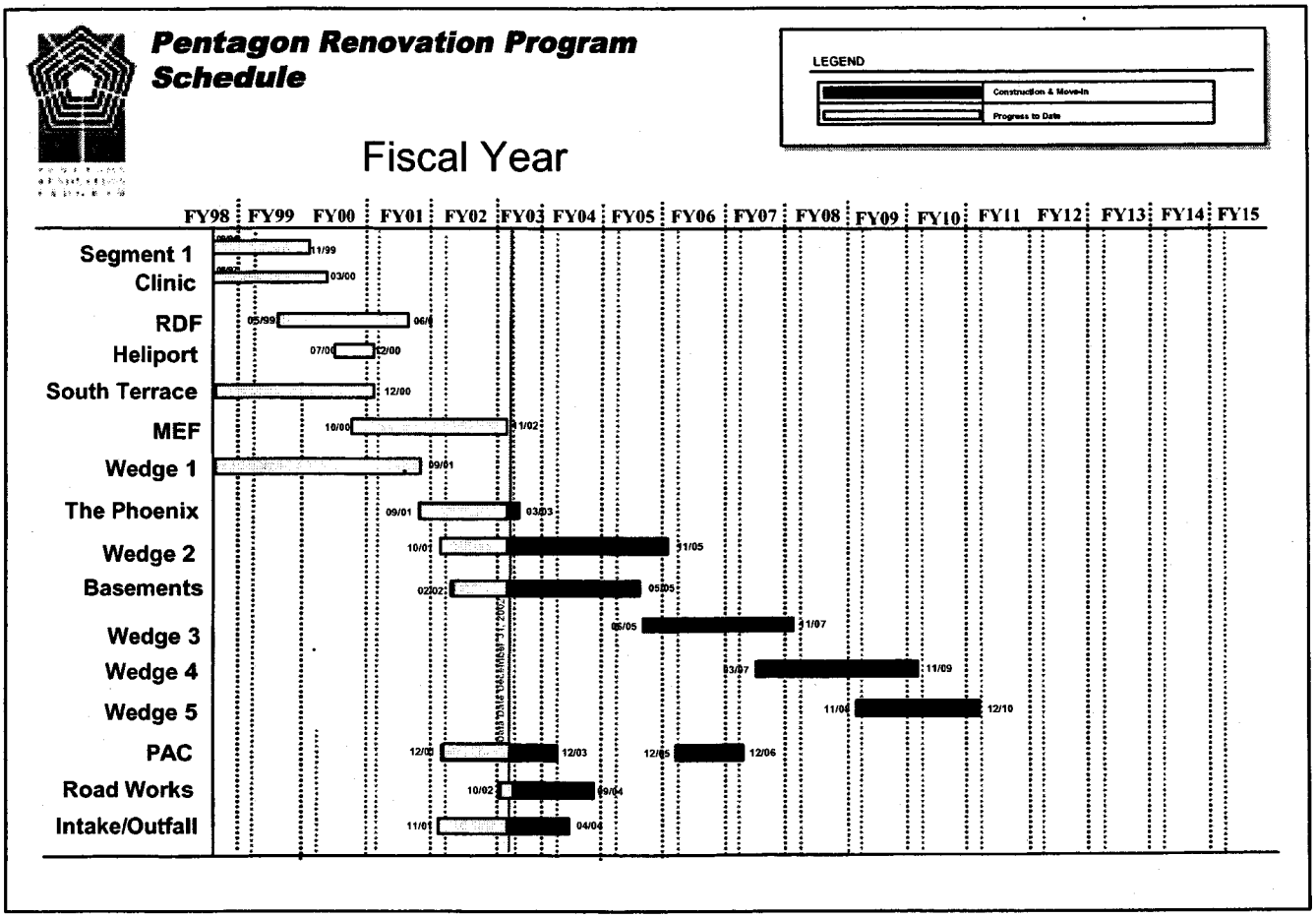
As part of the security enhancements to the Pentagon, a Roads, Grounds and Security Team was established and its contracts were awarded in October 2002 to design and construct the Pentagon Secure Bypass for Route 110 and the RDF Secure Access Lane from Route 27 to the Pentagon. Goals for these initiatives in our program schedule include completion by October 2004.

Other factors implemented to mitigate the impact on the Program schedule include the extensive use of award fees and incentive fees to motivate contractor partnering and performance, the evaluation of contractor proposed master schedules as a selection factor, and the nearly exclusive use of design-build contracts. The use of performance specifications in the design-build contracts allow the contractor to maximize innovations to reduce the schedule and budget.

The estimated completion date of 2010 includes the full scope of renovation activities including tenant move-out, demolition and abatement, core and shell construction and tenant fit-out.



The Universal Space Plan and "smart wall" system used in Wedges 2-5 will help the program stay on schedule by minimizing the need to make extensive tenant changes to office space.


Pentagon Renovation Program Schedule
LEGEND
Construction & Move-In
Progress to Date
Fiscal Year
FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15
Segment 1
Clinic
RDF
Heliport
South Terrace
MEF
Wedge 1
The Phoenix
Wedge 2
Basements
Wedge 3
Wedge 4
Wedge 5
PAC
Road Works
Intake/Outfall

PROGRAM BUDGET

SOURCE OF FUNDS

Section 2804 of the Department of Defense Authorization Act, 1991 (Public Law 101-510, see Appendix), established the Pentagon Reservation Maintenance Revolving Fund. This Act transferred responsibility for the operation, maintenance, protection, repair and renovation of the Pentagon Reservation from the General Services Administration to the Secretary of Defense. This revolving fund is the funding source for the Pentagon Renovation Project. In addition, the fund finances a full range of building services for Department of Defense components, including the military departments and other activities housed within the Pentagon Reservation.

The renovation was designed to be budget-neutral to the Department of Defense in that the Department could operate, maintain, protect and renovate the Pentagon for the rent the Department would have paid to the General Services Administration over a 12 to 14 year period.

Accordingly, the Pentagon Reservation Maintenance Revolving Fund was designed to operate on a break-even basis over the long term. Revenue for the revolving fund may be generated from various sources; however, the fund depends primarily upon monies collected from a user charge for space and building services. These charges are paid by the Department of Defense components and other tenants using Pentagon Reservation facilities or land, with rates corresponding to six categories of space: office, storage, special, joint use, commercial support and outside parking. The rates are established to recover the cost of day-to-day operations, maintenance, protection of the Reservation and essential capital improvements, including all costs associated with the Pentagon Renovation Program.

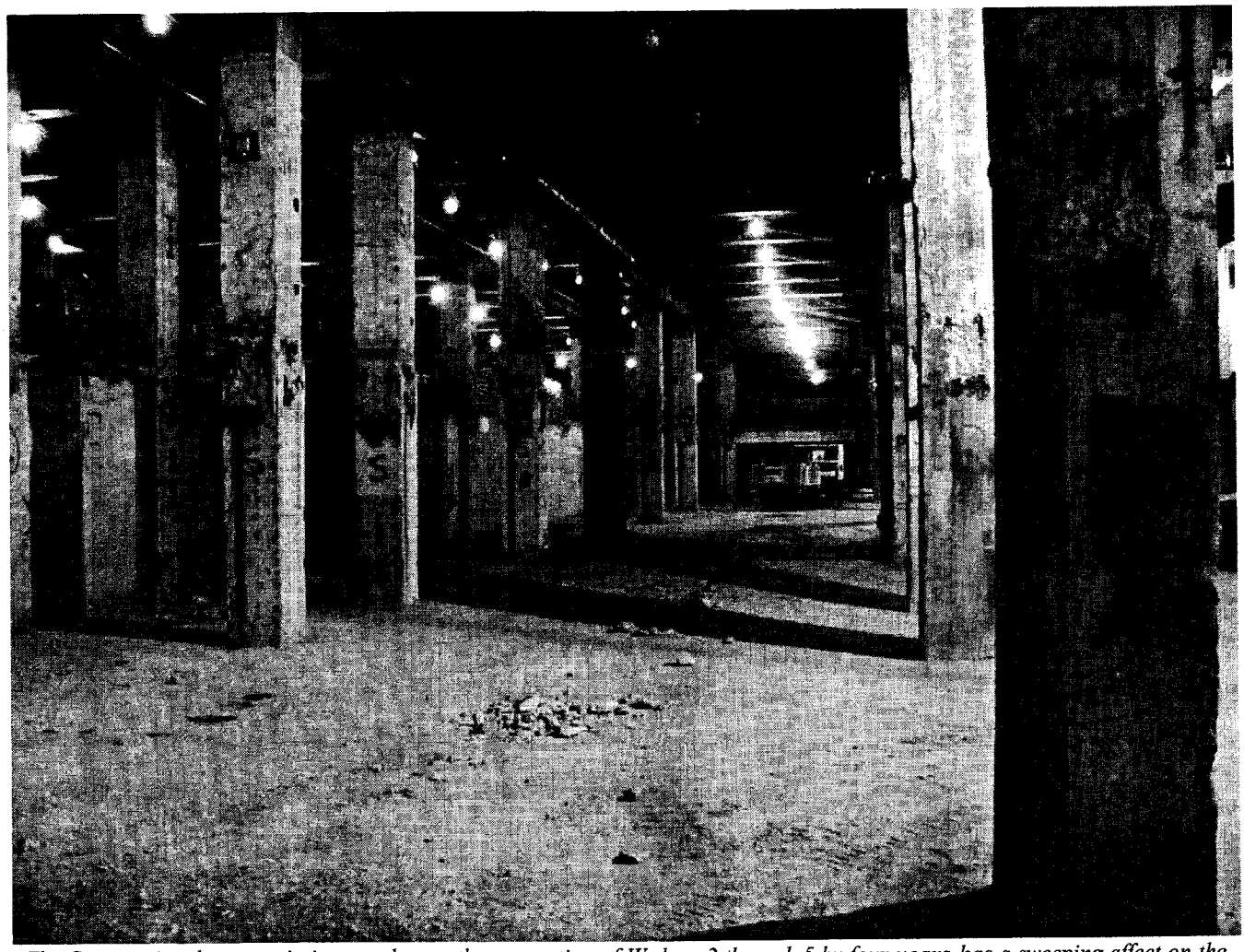
CERTIFICATION OF COST

Section 8056 of the FY 2003 Defense Appropriations Act (Public Law 107-248) requires that the Secretary of Defense certify the total cost for the planning, design, construction and installation of equipment for the renovation of Wedges 2 through 5 of the Pentagon, cumulatively, will not exceed four times the total cost for the planning, design, construction and installation of equipment for the renovation of Wedge 1. The cost of the renovation of Wedge 1 shall be adjusted for any increase or decrease in costs attributable to economic inflation.

In accordance with the referenced Appropriations Act, the calculation of cost limitation and cost of each wedge does not include any cost incurred for repair and reconstruction as a result of terrorist attack on September 11, 2001, nor costs attributable to additional security requirements deemed essential by the Secretary of Defense, nor costs attributable to compliance with new requirements of Federal, State or local laws.

Extensive internal management controls are in place to insure accurate tracking and monitoring of costs associated with the certification ceiling and to segregate costs of ancillary projects.

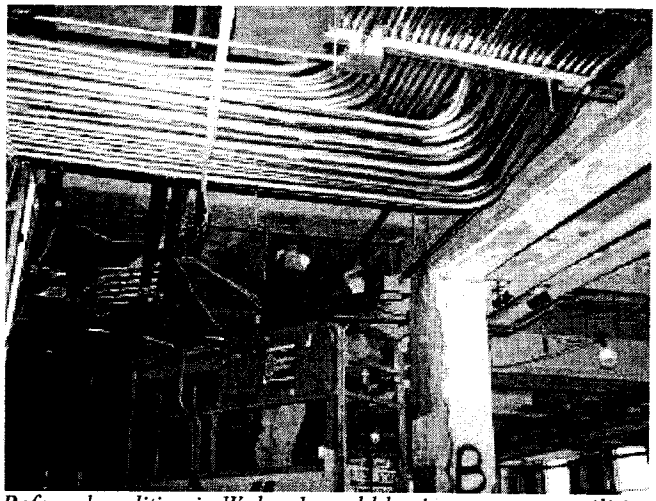
Consistent with the cost estimates prepared for projects in the Military Construction Program, this limitation does not include the cost of: 1) purchase and installation of Information Management and Telecommunications equipment, 2) rental and operation of leased swing space, 3) purchase and installation of furniture for the renovated Pentagon, and 4) separately authorized ancillary projects and security enhancements directed prior to the terrorist attacks. The Department of Defense Appropriations Act for FY 2003 and the required certification are included in the Appendix.



The Congressional appropriation to advance the renovation of Wedges 2 through 5 by four years has a sweeping affect on the Renovation Program. Basement space, intentionally left empty, will now be built-out for tenant use to accommodate new directives.

RENOVATION SEQUENCE

Over 25,000 tenant moves will be carefully orchestrated throughout the course of the renovation process.



Before demolition in Wedge 1 could begin, temporary utilities and communication lines had to be installed.

Wedge 2, immediately after demolition, ready for Core & Shell Construction.

The Pentagon Renovation consists of several individual efforts of work that all follow a similar sequence towards completion.

MOVE-OUT

One of the major challenges faced by the Renovation Program on a daily basis is the necessity of working around 20,000 people. Before renovation of an occupied area can begin, the people in that space must be moved to leased office space, temporary space built out within the Pentagon, or new permanent space after the completion of Wedge 1. This move includes all of the tenants' personal belongings, computer equipment and telephones. A major factor in the move-out process is the fact that Pentagon employees cannot afford any downtime in their daily activities. Therefore, the swing space must be renovated and operational to meet the needs of the displaced Pentagon tenants before the move-out process can occur. After the move, tenants are typically up and running at full speed within a 24-hour period.

TEMPORARY MECHANICAL, ELECTRICAL, PLUMBING AND COMMUNICATIONS

Temporary utilities, and communications are necessary to keep the Pentagon tenants surrounding the area under construction operational with minimal disruption. Temporary barrier walls are then constructed to ensure the safety and security of the tenants and to prevent noise, dust, and hazardous work conditions from being a distraction.

DEMOLITION & ABATEMENT

Before construction can begin, the area must undergo the demolition of all existing utilities and the abatement of hazardous materials including asbestos, lead-based paint, and Polychlorinated Biphenyls (PCBs). This is a very expensive and time consuming effort but absolutely essential in order to assure the health and safety of Pentagon tenants.

CORE & SHELL

Core and shell construction includes the build-out of common elements in an area, including walls and public corridors, and the rebuilding of primary utility systems.

TENANT FIT-OUT

Tenant fit-out is the building of interior office space based on the requirements of the intended tenants to the universal space concept. This phase also includes rebuilding of secondary utility systems.

INFORMATION MANAGEMENT & TELECOMMUNICATIONS (IM&T)

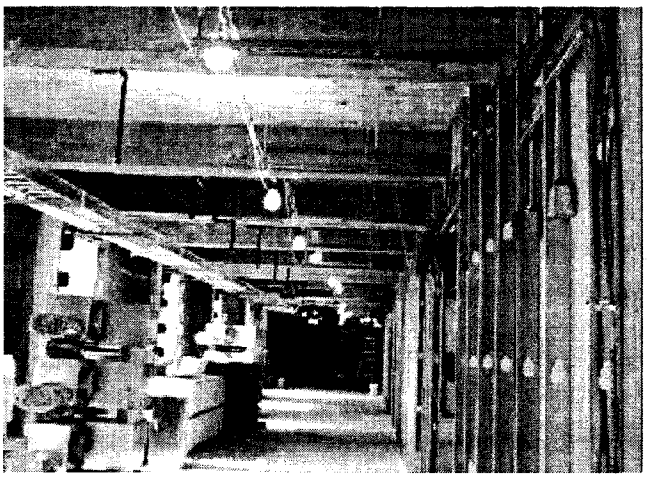
IM&T is an extensive effort to meet the requirements of the existing tenants while ensuring that the technological needs of future tenants can be met without another major renovation. Modern telecommunications and information management sources are provided throughout the Pentagon with access to global networks. Backbone communications are renovated and modernized to support voice, data, video, and other user requirements such as local area networks.

FURNITURE, FIXTURES & EQUIPMENT

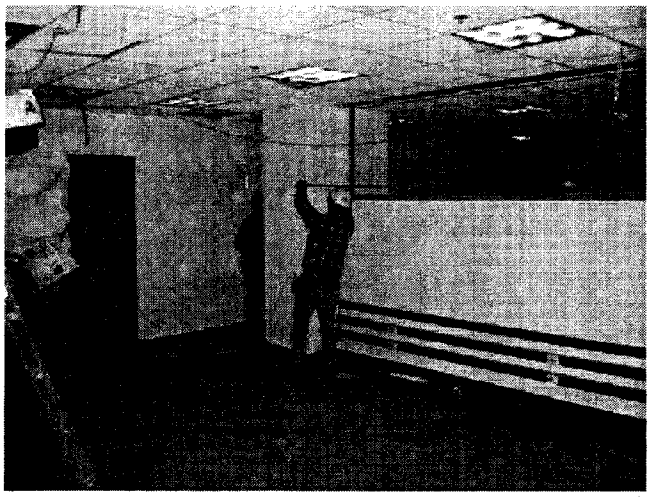
After the interior office space has been fitted-out and the information technology equipment installed, flexible systems furniture is installed to facilitate the operation of a modern office environment. The systems furniture includes a smart wall work station configuration, providing easily accessible pathways for electrical power and for telecommunications. This allows much greater flexibility in both the initial furniture layout and future reconfigurations.

SECURITY

The security of the Pentagon is a top priority to the Renovation Program. Security checks and upgrades



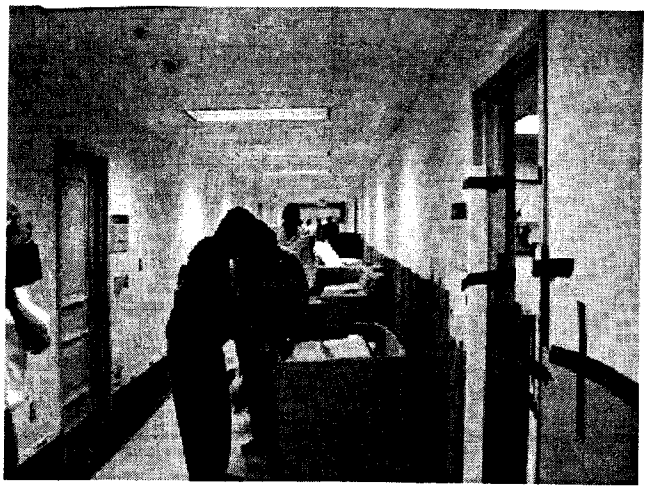
Wedge 2 core and shell construction.



Workers installing the "smart walls" and other tenant fit-out work in Wedge 2.

The new "smart wall" system in Wedges 2-5 allows for the placement of freestanding furniture, a departure from the more modular office furniture used in Wedge 1. The "smart walls" are the foundation for the Universal Space Plan concept.

Workers surveying the Metro Entrance Facility about three weeks prior to the Grand Opening.



The Relocation Team, preparing the E-Ring offices in Wedge 1 for tenant move-ins.

are implemented throughout construction and security accreditation is essential to the acceptance of the completed space.

COMMISSIONING

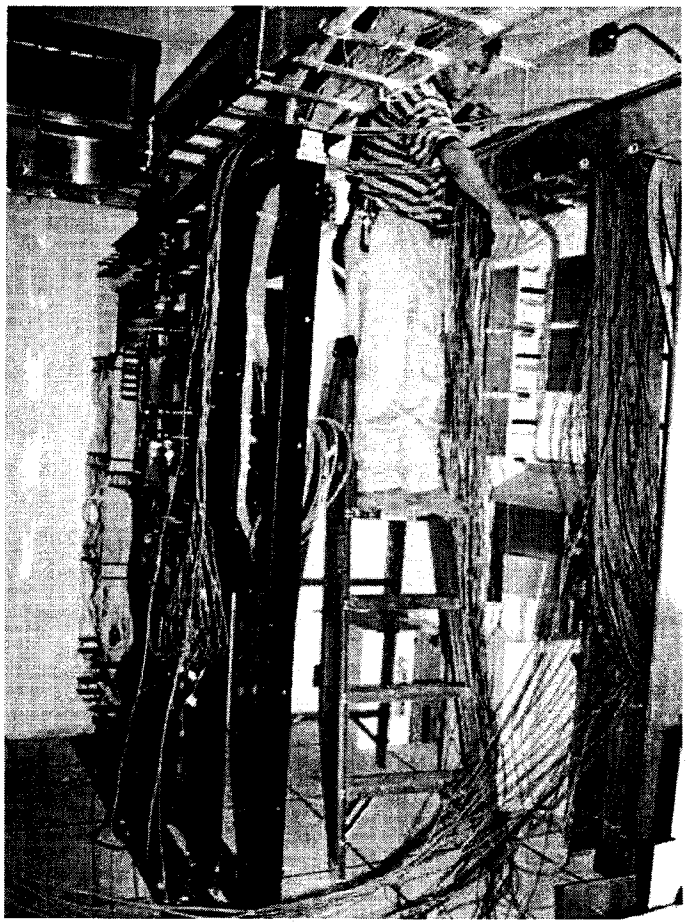
Commissioning is the process of verifying and documenting the performance of building systems in accordance with the design and the owner's functional and operational needs. Commissioning starts in the design phase and extends through the construction process and warranty period.

MOVE-IN

The culmination of every renovation effort is the move-in of tenants to the renovated space. As with the move-out, the Renovation Program strives to minimize any downtime the tenants may experience in their daily operations. Tenants are typically back to full operation within 24 hours of vacating their office for their newly renovated space in the Pentagon. This includes the relocation of all personal items and the re-commissioning of computers and telephones to the IM&T infrastructure.

Workers installed the original communications cable in the early 1940s (left). In most cases, these original lines have never been documented or removed. The new lines have been placed on top of the old. It is estimated that there are 16,000 miles of lines in the unrenovated Pentagon.

Below, a worker installing new data and phone lines through a telecommunications closet in Wedge 1.



II. Work in Progress

A Phoenix Project worker cutting limestone for the building facade

II. WORK IN PROGRESS

Phoenix Project/Wedge 1 Recovery

Wedges 2-5

Swing Space

Basement Mezzanine Segments 2 & 3

Metro Entrance Facility

Remote Delivery Facility

H&RP Intake-Outfall Line

Roads, Grounds & Security

II. Work in Progress

The photo above was taken one week after September 11, as fire and rescue crews continued recovery and rescue operations.

The photo at the left was taken less than one year later. The facade and structure were 100% complete on June 11, 2002.

PHOENIX PROJECT/WEDGE 1 RECOVERY

The Phoenix Project involves rebuilding the section of the Pentagon that suffered structural damage as a result of the September 11 attack. The area of work extends from Corridor 4 to Corridor 5 through the outer three rings of the Pentagon, E, D, and C. The 400,000 square feet of space falls in the along the dividing line of Wedge 1 and Wedge 2. The Phoenix Project scope of work includes rebuilding the core and shell of Wedge 1 and shell of Wedge 2.

In the weeks immediately following the attack, 10,000 tons of debris were hauled from the collapsed area of the building to safely continue the recovery effort. A total of 50,000 tons of debris were moved from the site during demolition.

Full-scale demolition began on October 18, 2001, starting with the disassembly of outer limestone cladding on the exterior of the building and was estimated to take at least two and possibly six months to complete. Reconstruction of the demolished area began on November 19, one month and one day after demolition began, with the concrete being placed for the first new structural columns.

By April 5, 2002, the entire concrete structure of the Phoenix Project was complete. Just over two months later, on June 11, 2002, the last piece of limestone was placed on the building facade. Nine months after the terrorist attack, the exterior of the Pentagon was whole again. The Pentagon Renovation Program continued to outpace its goals by moving the first tenants back into their E-ring office spaces on August 15, 2002, a full 28 days ahead of their goal of September 11, 2002. The final Wedge 1 tenants were moved back into their offices in February 2003.

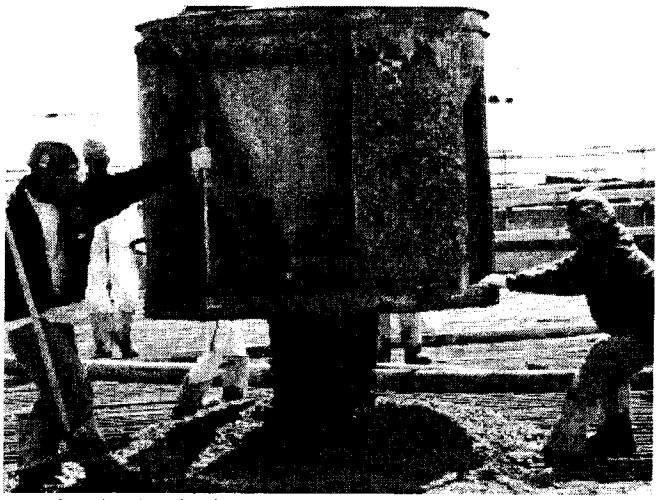
PHOENIX PROJECT HIGHLIGHTS

- **400,000 square feet of space demolished**
- **Over 50,000 tons of debris removed**
- **21,000 cubic yards of concrete required for construction**
- **PENREN exceeded its original goal of having the E-ring at point of impact rebuilt and occupied by September 11, 2002**

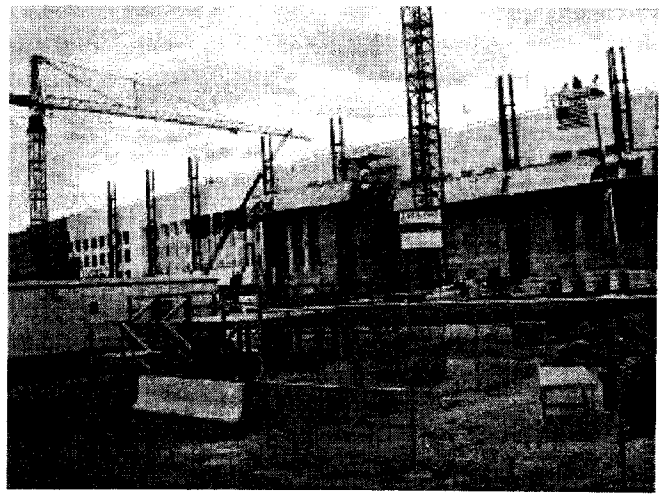
Workers hanging the initial pieces of limestone for the building facade. The building's new and original limestone came from the same vein in Indiana.

CHALLENGES

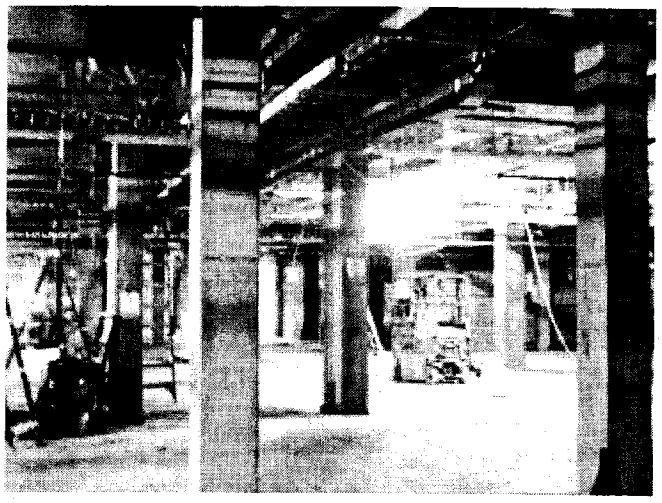
Aside from the emotional toll the attack had on the renovation personnel, there were a number of logistical and structural issues to overcome in order to start the



April 5, 2002: The final concrete pour. The structure of the Phoenix Project reaches substantial completion just 7 months after the terrorist attack.



Masonry crews made good progress on the facade as the concrete structure was "topped out." Below, a view of the interior core & shell construction progress, as of April 2002.



reconstruction of the Phoenix Project. Structural damage caused by the impact to the concrete columns and floor slabs and constructability considerations required a greater area of demolition than originally expected. On a demolition project of this size, a schedule of approximately six months would have been typical. For the Phoenix Project, an aggressive schedule of two months was determined necessary to achieve the goal of reoccupying the E-ring by September 11, 2002. The demolition was completed 4 weeks ahead of the already aggressive schedule through the hard work of the crews that worked 24 hours a day, 7 days a week.

Due to the demolition of the building structure, it was necessary to identify alternate telecommunication pathways to reestablish communications in adjacent restored tenant areas prior to the build-out of telecommunications closets in the Phoenix site. A temporary electrical vault was required to replace the one destroyed in the attack and to provide electrical service to these tenant areas.

Working from the original 1941 construction drawings proved to be another challenge. Of the first 44 structural columns that needed to be replaced, 38 of the pile caps that support the columns were in a different location or were a different size than shown on the drawings. Four pile caps were missing altogether. Only two were found as expected. This necessitated the construction of concrete beams at ground level to evenly distribute weight which would have otherwise been eccentric on load-bearing surfaces.

MILESTONES

September 11, 2001 - Hijacked American Airlines Flight 77 slammed into the Pentagon at 350 miles-per-hour, carrying approximately 10,000 gallons of jet fuel.

September 25, 2001 - The decision was made to delay the start of demolition until after the memorial ceremony held on October 11, 2001 at the Pentagon. By this time, over 10,000 tons of debris had been removed to stabilize the shifting structure to conduct rescue, recovery and evidence searches.

October 18, 2001 - The full-scale demolition began of 400,000 square feet of space. Work continued 24 hours a day, 7 days a week.

November 19, 2001 - Demolition was completed and reconstruction began, four weeks ahead of the aggressive eight week schedule.

February 5, 2002 - The first blast resistant window was installed in the newly constructed E-ring of the Phoenix Project. By this time, the concrete slabs were complete for the second and third floors and work was progressing rapidly on the fourth floor slab. The E-ring wall had risen to the third floor.

April 5, 2002 - Workers make the final concrete pour on the Phoenix Project. A topping out ceremony, attended by Secretary of Defense Donald Rumsfeld is held at the Phoenix Project site.

June 11, 2002 - The final piece of limestone is placed on the Pentagon facade, signalling substantial completion of the Phoenix Project exterior work.

August 15, 2002 - The first E-ring tenants return to their offices, 28 days before the September 11 goal.

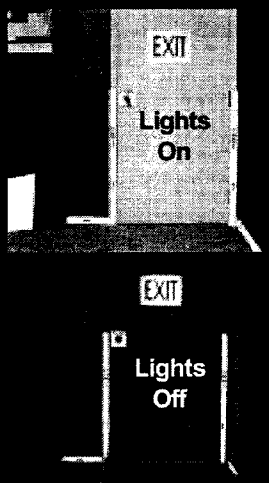
September 11, 2002 - Two ceremonies were held on the Phoenix Project site. Over 12,000 people attended the "United in Freedom" ceremony, held in the morning to commemorate the lives lost in the terrorist attack. A Worker Appreciation Ceremony was held in the afternoon to highlight the efforts of those who worked so hard to rebuild the Pentagon.

Fire & Life Safety Improvements at the Pentagon

After September 11, the Pentagon Renovation Program formed a task force with attack survivors police, fire and rescue workers to assess the strengths and weaknesses of the Wedge 1 renovation from a fire and life safety standpoint. Here are a few of the improvements made by the Renovation Program:

The radial corridors, elevator shafts, stairwells and other mission-critical areas are reinforced to create fire safe zones and provide additional rigidity to the building.

Additional stand-pipes are included in the renovation of the Pentagon to provide maximum water pressure to an already robust sprinkler system.

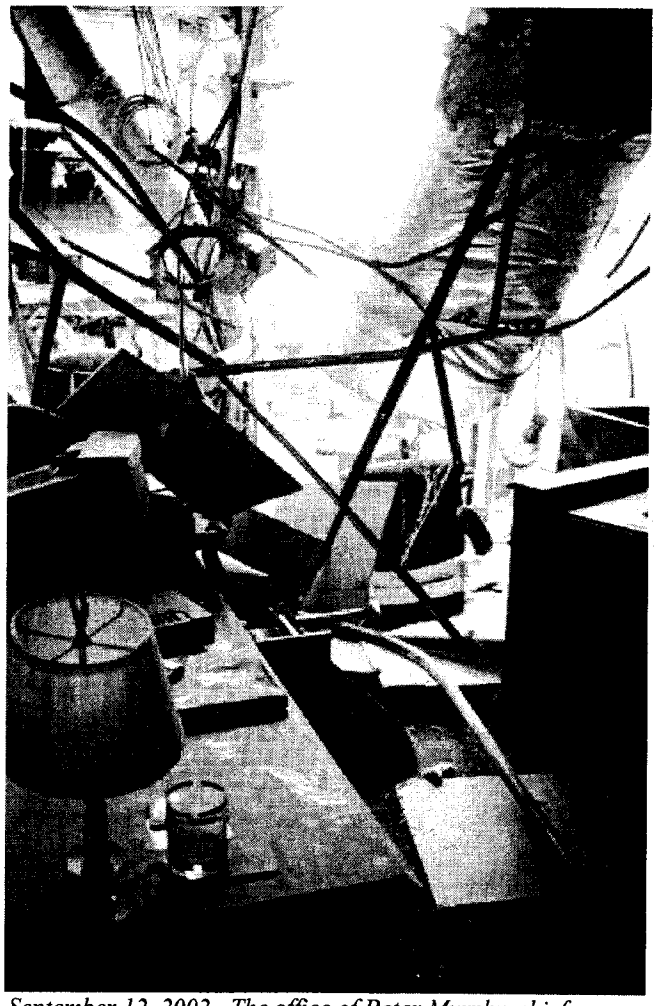


Photoluminescent signage and directional strips were installed in the building. These signs glow for about four hours after 15 minutes of exposure to fluorescent lighting. The glow-in-the dark arrows and signs are placed to lead Pentagon employees to the appropriate exits in the event of a fire or power outage in the building.

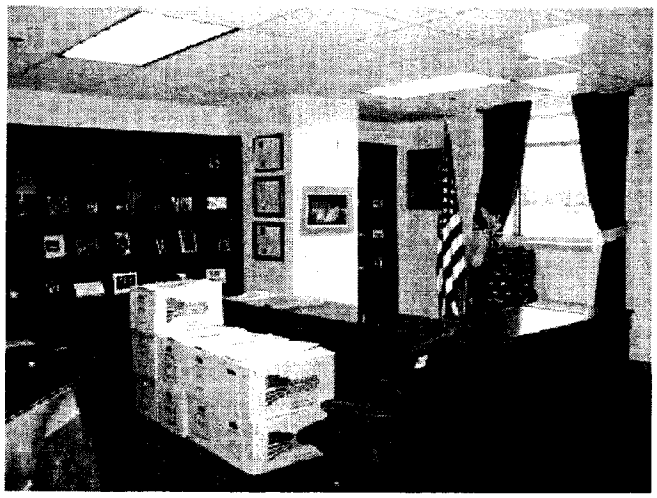
II. Work in Progress — Phoenix Project/Wedge 1 Recovery

A photographic illustration of the damage caused by the September 11 terrorist attack on the Pentagon, and highlights of the building's restoration. The photos culminate with a picture of the ceremony held at the Phoenix Project site on September 11, 2002.

September 11, 2001 - The fire on the Wedge 1 side of the building was quickly extinguished by the sprinkler systems. However, in the unrenovated Wedge 2 side, the fire continued to burn for about 2.5 days.

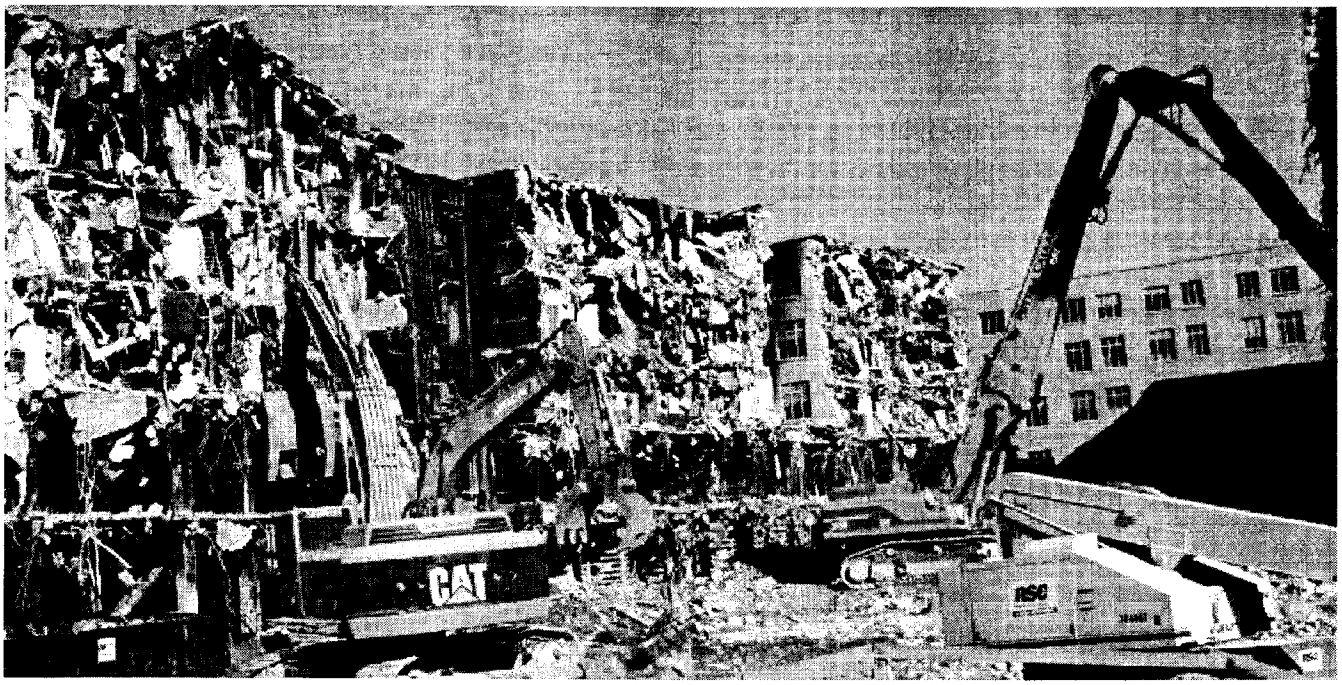


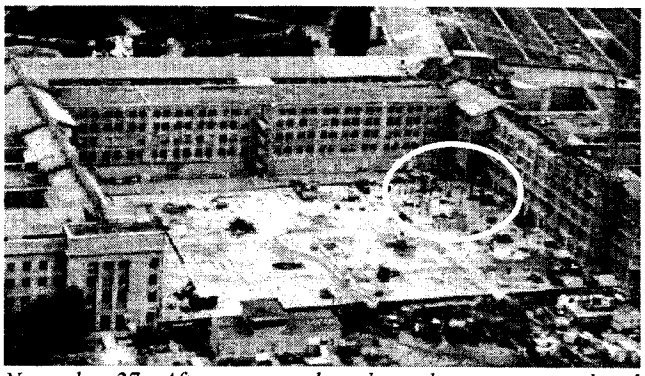
September 12, 2002 - The office of Peter Murphy, chief counsel to the Commandant of the Marine Corps. Murphy's office is located on the expansion joint where the building collapsed on September 11.



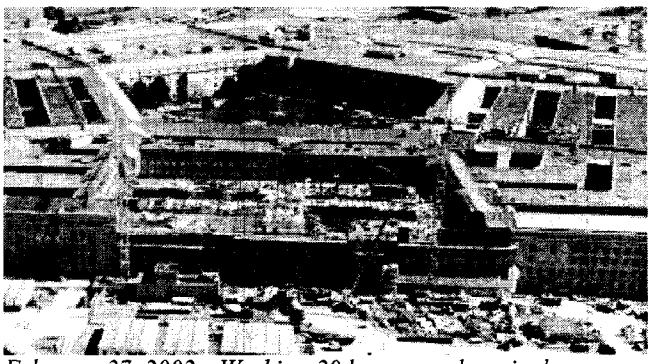
August 15, 2002 - Peter Murphy's office on the first tenant move-in day. Below, Murphy (left), with Secretary of Defense Donald Rumsfeld (center) and Robert Hoague, another survivor of the September 11, terrorist attack.

Below, a view of the demolition work. Demolition began on October 18, 2001

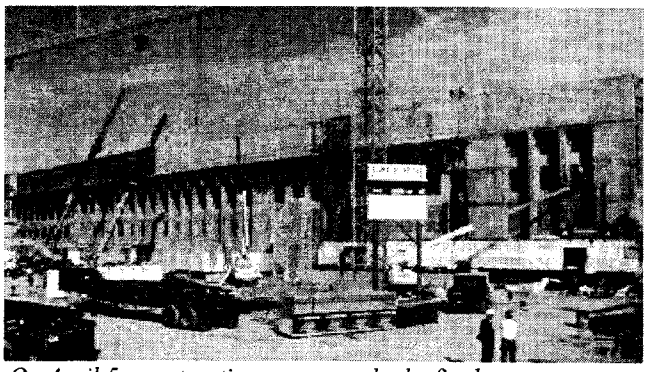




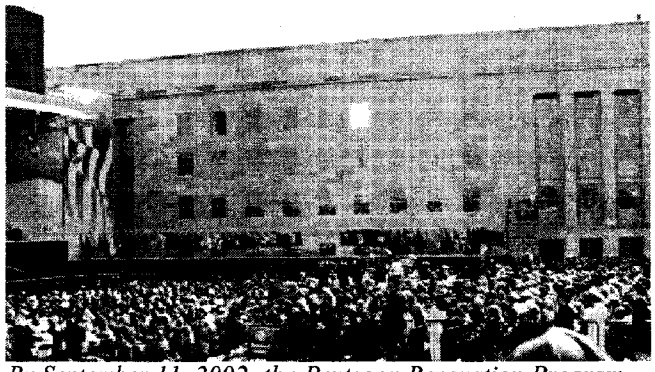
November 27 - After one month and one day, crews completed the demolition phase of the Phoenix Project. This photo shows the initial column formwork (circled) to support the 2nd floor.



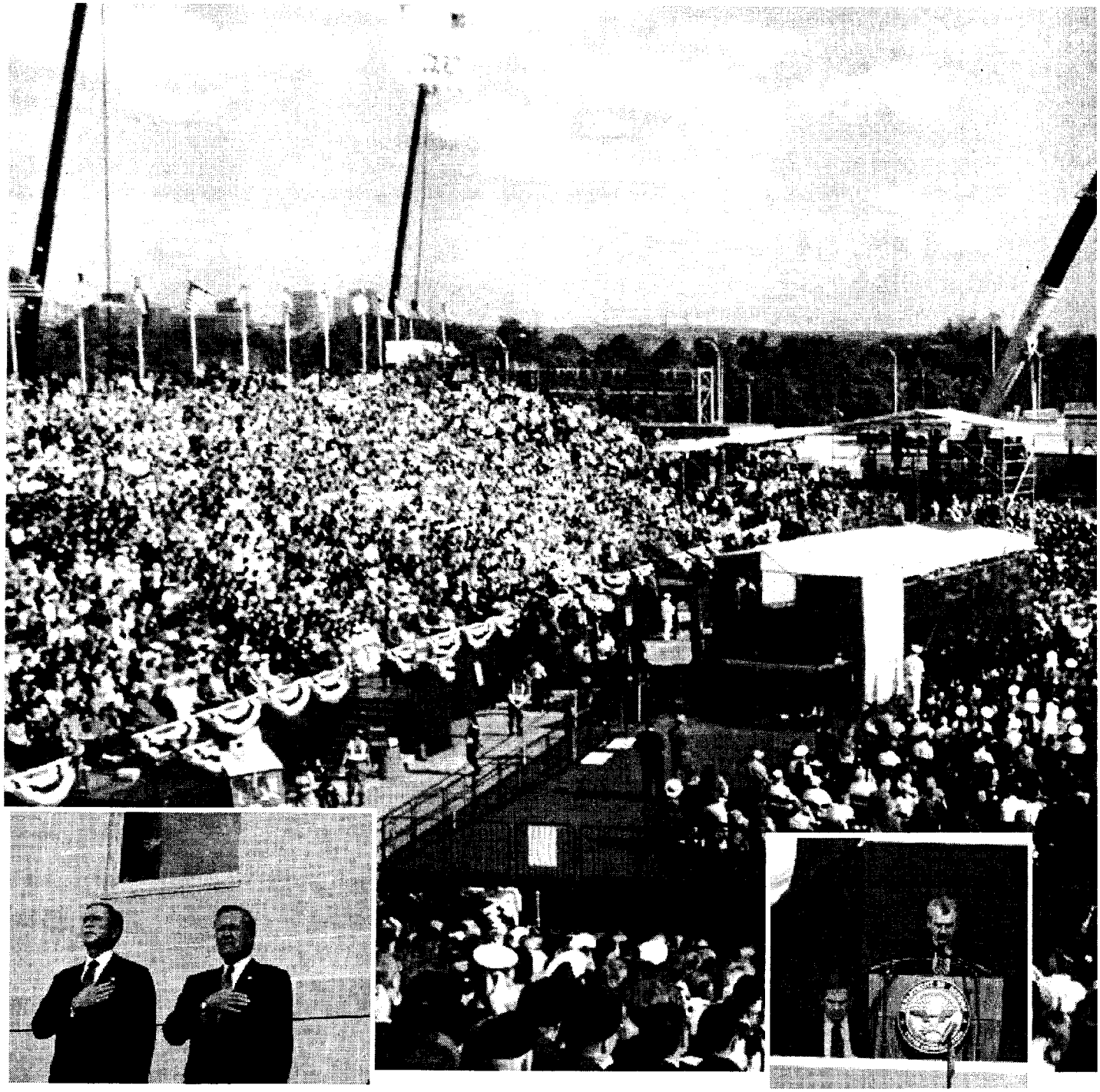
February 27, 2002 - Working 20 hours per day, six days a week, construction crews made tremendous progress on the Phoenix Project structure.



On April 5, construction crews made the final concrete pour, finishing the Phoenix Project structure.



By September 11, 2002, the Pentagon Renovation Program had surpassed its original goal by having the entire E-Ring occupied in time for the commemorative ceremonies.



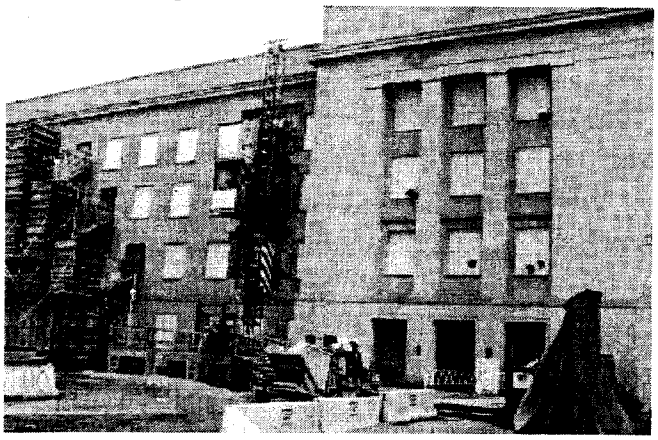
September 11, 2002 - About 15,000 people came to the "United in Freedom" ceremony which commemorated the 9/11 terrorist attack and the subsequent rebuilding of the Pentagon. Later that morning, a Worker Appreciation ceremony was held to specifically highlight and honor the achievement of the 3,000-plus workers on the Phoenix Project.

In the photo on the left, President George W. Bush and Secretary of Defense Donald Rumsfeld took part in the morning ceremony. In the photo on the right Lee Evey addresses the crowd as Deputy Secretary of Defense Paul Wolfowitz (seated, left) looks on

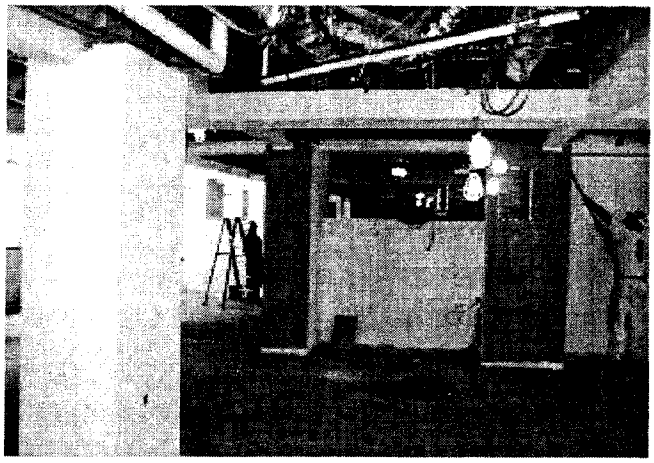
Pictured on the left, Pentagon Renovation Program team members view the morning festivities. To the right, one of the "hard hat patriots" that were honored during both ceremonies at the Phoenix Project site.

II. Work in Progress

The following photos illustrate some of the processes in the Short Interval Production Schedule being used in Wedges 2-5.

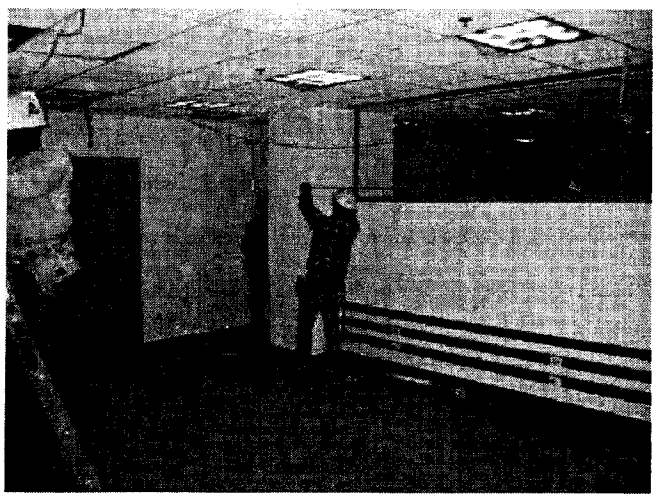


An outside view of the demolition phase of Wedge 2

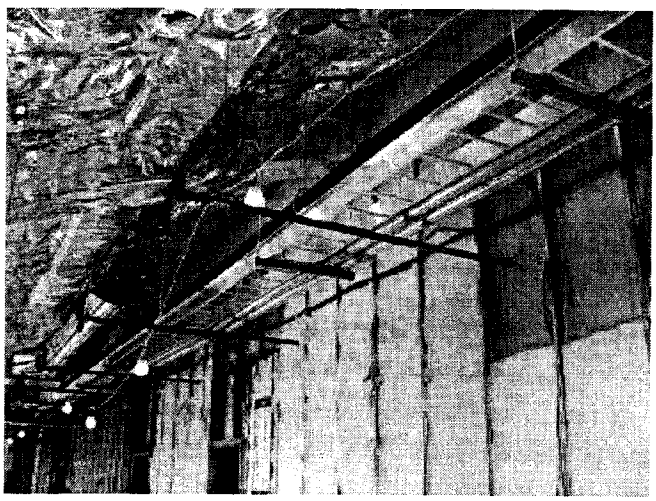


Workers finishing the drywall in a Wedge 2 space. Much of the Tenant fit-out work has been completed.

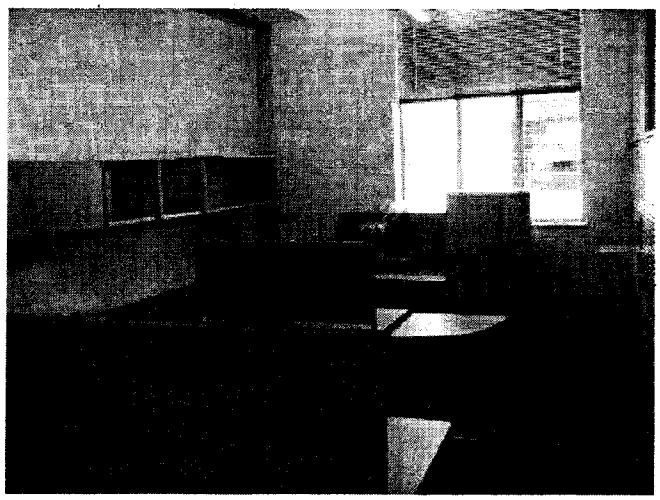
Inside, after demolition and abatement of space is complete.



Installation of the "smart walls."



In the photo above, much of the IT framework and light carpentry has been installed.



A completed office space, after furniture installation.

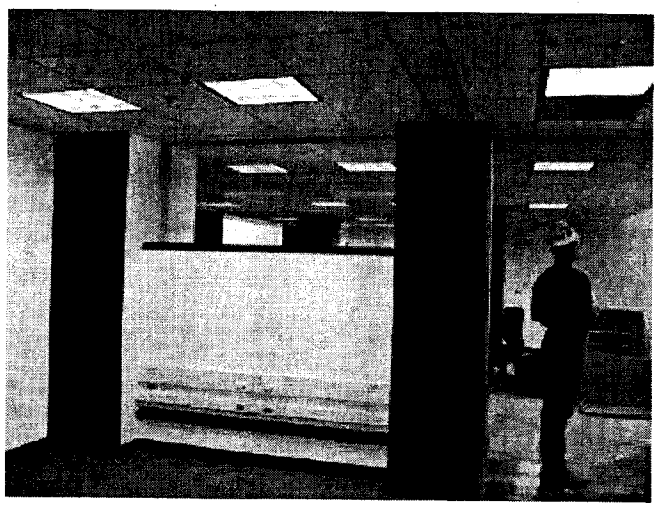
WEDGES 2-5

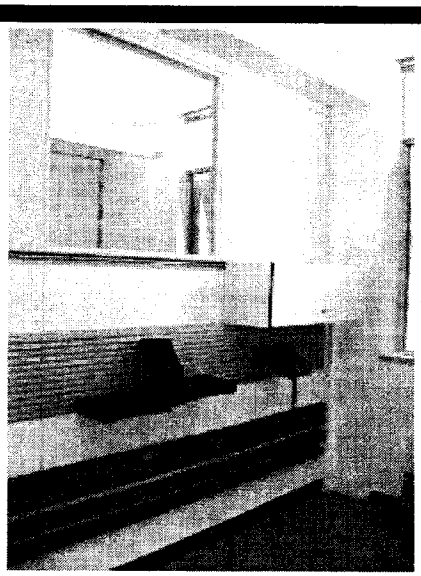
Wedges 2-5 is a phased design/build renovation of 4 million square feet of space in the Pentagon. The project brings all remaining un-renovated areas of the building into compliance with modern building, life safety, ADA and fire codes. Work includes removal of all hazardous materials, replacement of all building systems, addition of new elevators and escalators to improve vertical circulation, and installation of new security and telecommunications systems. Renovated spaces will be modern, efficient, and flexible. The project, underway since September 2001, is on an accelerated schedule for completion in December 2010, four years sooner than originally planned.

During the past year, much has been accomplished on Wedges 2-5. Master plan design of Wedges 2-5 is complete, as is core and shell design of the first two phases of Wedge 2. Tenant fitout design is well underway, and design of the third (and final) phase of Wedge 2 is in progress. Sustainable design measures have been integrated into the design. The Wedges 2-5 project is enrolled in the Leadership in Energy and Environmental Design (LEED) Existing Buildings Pilot Program, and is working to achieve a gold rating. Force protection initiatives prompted by the September 11, 2001 terrorist attack have been successfully incorporated into the design. These include increased blast resistance,

WEDGE 2-5 HIGHLIGHTS

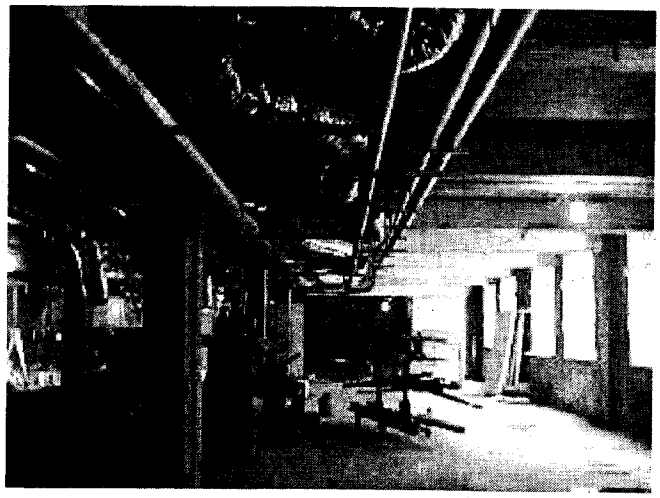
- **4,500,000 square feet of building space**
- **Need to move the 20,000 people who occupy Wedges 2-5**
- **5,000 tenants to be coordinated/relocated during each phase**
- **Communication connectivity required for relocated tenants**
- **Implementation of very flexible universal space concept**
- **Temporary utilities required for each phase to maintain existing building services**
- **Providing utilities for future occupiable use of Basement/ Mezzanine**
- **Demolition/abatement removal estimates:**
  - ***-332 million pounds of debris***
  - ***-115 million pounds of hazardous material***
  - ***-Goal of 70% material to be recycled***
- **New building elements:**
  - ***- Energy saving building elements/materials***
  - ***- "Smart Wall" system***
  - ***- Elevators/escalators***
  - ***- Automated building control systems***
  - ***- Thermal insulated and blast-resistant windows***
  - ***- Security upgrades***
  - ***- Building code and ADA compliance***
- **Relocation and build-out of Defense Secretaries/Operation centers**
- **Relocation and planning for food service and retail building functions**
- **External historical features preserved**





In the Universal Space Plan, the partition walls stand 5'6" tall (left). Additional wall units can mounted on the existing walls to create private offices that meet all current security requirements (right)

These photos show Wedge 2 areas on the fourth floor, where demolition has been completed and core and shell work has begun. In the top photo, new windows have been installed. Below, a view of some initial ductwork.



improved fire protection/life safety, and inclusion of chemical, biological and radiological (CBR) protection.

Construction is progressing well in all areas of the first two phases of Wedge 2, and is on track for completion in October 2003. Demolition and abatement was completed ahead of schedule in April 2002. Decommissioning of building mechanical, electrical and telecommunications systems was recently completed. Because of the age and poor documentation of existing systems, the decommissioning effort required detailed planning and careful execution. Work currently ongoing includes construction of new half-corridor bridges, installation of new elevators, and rapid build-back of tenant office spaces.

CHALLENGES

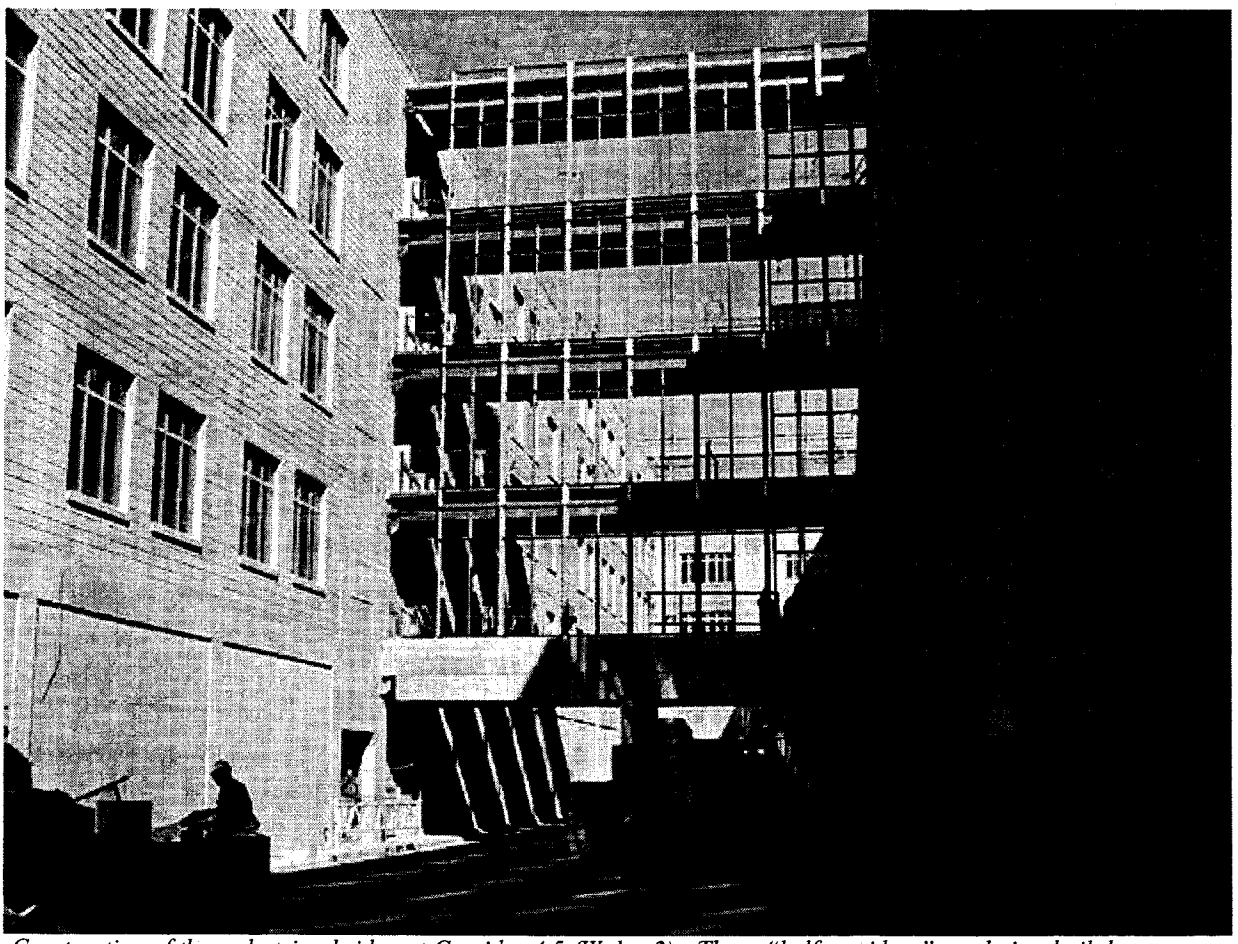
Key project challenges include integration of changing requirements (primarily telecommunications and force protection upgrades), tenant requirements gathering, and coordination of project turnover/tenant relocations. The September 11, 2001 terrorist attack caused the Renovation Program to reassess and upgrade project design criteria in many areas. Identification and implementation of the new criteria has been extremely challenging because design and construction had to proceed while studies were in development in order to meet the overall accelerated program schedule. Tenant requirements gathering has historically been a challenge for the Renovation Program and continues to be a challenge for Wedges 2-5, particularly for nontypical tenant spaces. Project turnover and tenant relocation to newly completed space is a complex effort. It must be carefully orchestrated to ensure a smooth transition for tenant missions and timely release of new areas for renovation.

MILESTONES

The renovation of Wedges 2-5 will be accomplished in four major increments (wedge by wedge), each of which has been sub-phased to accommodate the accelerated

schedule. Wedge 2 has three sub-phases. The first two phases are under construction now and will be complete in October 2003, and the third phase will be complete in November 2005. Tenant relocation to newly renovated spaces will occur in phases, beginning in June 2003.

The Wedge 2-5 project is also responsible for completing a building-wide pathway for a new telecommunications backbone. This task is dependent upon making final building-wide connections to the new Center Courtyard utility infrastructure. This coordinated effort will be complete by Summer 2003.



Construction of the pedestrian bridge at Corridor 4.5 (Wedge 2). These "half corridors" are being built between all ten of the Pentagon's radial corridors to increase accessibility and building circulation.

he Pentagon Renovation Program had moved pproximately 5,000 tenants into swing space in the entagon and leased office space to accommodated the enovation of Wedge 1. In all, approximately one million quare feet of swing space was renovated to complete this ission. Due to the terrorist attack, 800,000 square feet of ffice space was leased by General Services Administration to ccommodate the 4,600 people displaced from the Pentagon. he Renovation Program provided logistical support and ersonnel for this effort.

SWING SPACE HIGHLIGHTS

- **910,000 square feet (45 floors) renovated**
- **Over 7,000 personnel moves accomplished**
- **New communications systems installed**
- **Connectivity with the Pentagon maintained**

SWING SPACE

Early in the planning process, it was determined that the most efficient way to renovate the Pentagon while keeping the building operational for its 25,000 tenants was to relocate one-fifth of the building's personnel from their current location in the Pentagon into temporary offices, or swing space, in and around the building. The vacated "wedge" is then demolished and abated of all hazardous materials before being built-out to meet the needs of the tenants in the adjacent wedge, who will move-in upon completion of the space.

The tenants, who were moved out of the Pentagon in order to complete the first wedge, will continue to occupy the three main external swing space buildings until the completion of Wedge 5.

Post-September 11 events led to the creation of new space consuming requirements. These requirements effected a change in the amount of total available swing space in the Pentagon that is to be used to accommodate the build out of Wedges 2-5. In addition to the space required for the increased force protection requirements, the mission essential functions continue to evolve.

The Renovation Program continues to monitor the impacts of these changes to plan for the internal swing space needs and availability at each stage of the renovation.

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These photos show the various types of work taking place in the Basement/Mezzanine section. Above, workers installing a duct bank in basement Segment 2. Below, a worker fireproofing one of the steel columns in Segment 3.

BASEMENT SEGMENTS 2 AND 3

The Basement Segments 2 and 3 project is a design-build renovation of 300,000 square feet of below-grade space in the Pentagon beneath Wedges 2, 3 and 4. In early 2000 while demolition and abatement were in progress, renovation of Basement Segments 2 and 3 was suspended indefinitely due to budgetary constraints. In 2001, the plan was revised to authorize Navy-funded build-out of 30,000 square feet of Navy general office space in Segment 2. The plan was changed again in early 2002 to provide enhanced universal space (EUSP) in the balance of Basement Segments 2 and 3. This was necessitated by a Congressional mandate to accelerate the overall Renovation Program. Work includes construction of structural floor slabs to compensate for historically bad soil conditions, addition of a mezzanine-level protective interstitial "roof", replacement of all building systems, provision of new mission-critical utilities, addition of new elevators, and installation of new security and telecommunications systems. Renovated spaces will be modern, efficient and flexible. The project is on an accelerated schedule for phased completion in 2003 and 2004.

During the past year, remarkable progress has been made in Basement Segments 2 and 3. Core and shell design is complete, and tenant fit-out design is nearing completion. Force protection initiatives prompted by the September 11, 2001 terrorist attack have been successfully incorporated into the design. These include increased blast resistance, improved fire protection/life safety, and inclusion of chemical, biological and radiological (CBR) protection.

Construction is progressing rapidly in all areas of the Basement. Major demolition and installation of new foundations were recently completed, and decommissioning of building mechanical, electrical and telecommunications systems is nearly complete. In Segment 3, new floor slabs have been installed, the new

protective interstitial level has been constructed, and tenant fit-out is in progress. In Segment 2, installation of above and below ground utilities, and new floor slab construction are ongoing. Over 1000 foundation piles have been installed to support the new floor slab. New electrical and telecommunications ductbanks have been installed throughout the basement.

CHALLENGES

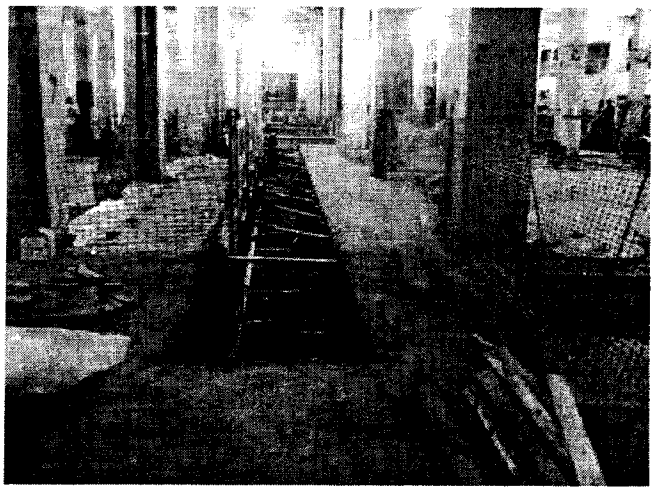
The completion schedule for Basement Segments 2 and 3 is critically linked to the above ground renovation of Wedges 2-5. New basement occupants must vacate their current above ground locations in conjunction with key milestones for Wedges 2 and 3. This schedule linkage dictates that basement work be performed directly below critical DoD operations. The close proximity requires restricted operations, methods and work hours. Further, seemingly unrelated delays to the basement work can cause delays to the overall completion of Wedges 2-5.

MILESTONES

Segment 3 will be ready for occupancy in Summer 2003. The Navy space in Segment 2 will be complete in May 2003, and the balance of Segment 2 will be complete in Fall 2004.

BASEMENT/MEZZANINE SEGMENT HIGHLIGHTS

- **150,000 square feet of space demolished and abated in preparation for new construction to begin.**
- **175 linear feet of tunnel added to communications trenches.**
- **1,200 personnel moved into renovated space.**
- **30,000 square feet prepared for new construction.**



One of the communications trenches in the basement.

METRO ENTRANCE FACILITY

The Metro Entrance Facility project was directed by Congress in the FY2000 Department of Defense Appropriations Act in response to threat assessments that identified the need to improve the physical security of the Pentagon. These initiatives involved relocating the bus station away from the face of the Pentagon and removing the existing direct entry into the building from the Metrorail station. Under the revised site configuration, all persons entering the Pentagon will be screened in a building addition that will serve as a public access control area.

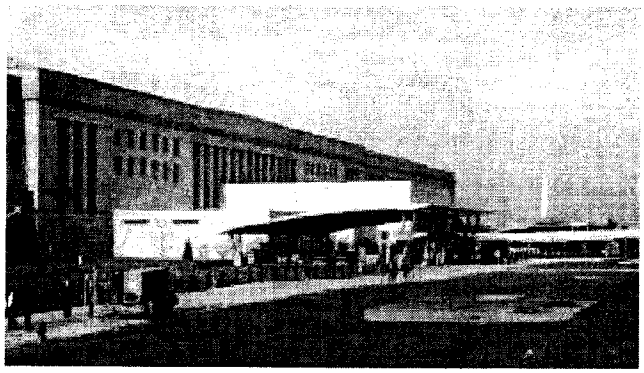
The new Pentagon Transit Center, which opened December 16, 2001, is of significant interest to the surrounding communities as 34,000 people transit through the facility each day. Construction of the new bus station included two bus platforms and realigned roadways, a Metro sales office, and support spaces. Additionally, the Pentagon Renovation Program provided the infrastructure to support future transportation technology. Working closely with the Washington Metropolitan Area Transit Authority, members of Congress and their staffs, as well as the public, the Pentagon Renovation Program was able to address the concerns of the various interested parties and incorporate their needs into the design, while still meeting the Department of Defense security requirements. It is important to note that mass transit operations and access into the Pentagon was maintained during all phases of the project.

The grand opening of the building addition was celebrated on November 21, 2002. This addition incorporates the many security features that significantly reduce the vulnerability of this entrance. It also serves as the public's entrance to the Pentagon, housing the Pentagon Tour Office with a waiting area and small theater, informational displays by the services, and the Badge Office.

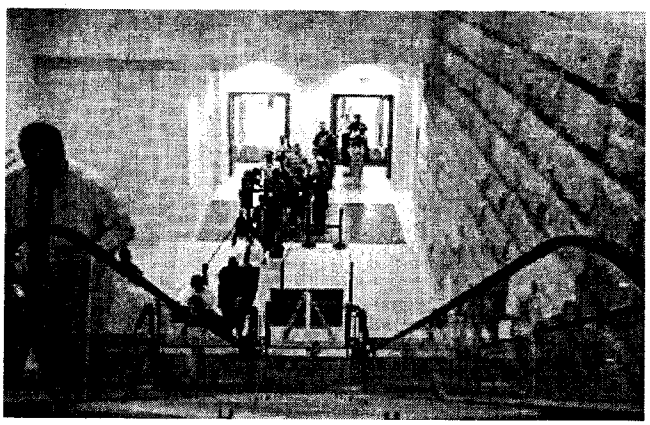
The Metro Entrance Facility is the second project within the Pentagon Renovation Program to use a design-build project delivery system. A single design-build team is responsible for the design and construction of the project.

METRO ENTRANCE FACILITY HIGHLIGHTS

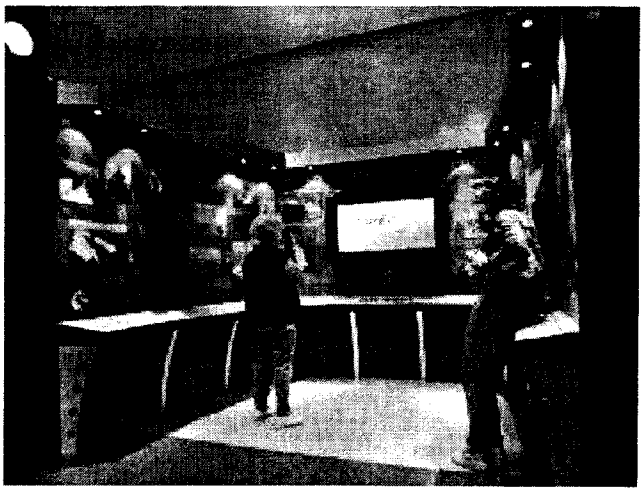
- **34,000 people use the facility on a daily basis.**
- **New security enhancements, such as better lighting and closed circuit TVs added.**
- **Mass transit operations and Pentagon access maintained for duration of the project.**



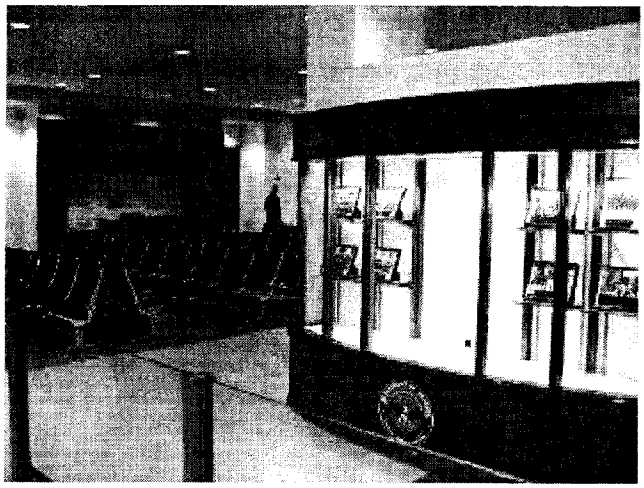
A view of the completed Pentagon Metro Entrance Facility (MEF). The MEF was completed on schedule, despite construction delays caused by the 9/11 terrorist attack. The entrance facility and bus loop are designed to adequately handle the 34,000 daily commuters who take the bus or Metro Rail to the Pentagon.



The initial opening of the MEF took place on July 31. One set of escalators to the building were operational at that time.



Each of the five service branches has a display kiosk in the waiting area of the MEF.



The new waiting area for Pentagon Tours and other visitors to the building.

Left to right: Chuck Malacarne (MEF Team Leader), John Pugrud (Pentagon Force Protection Agency), Aron Allmon-Kok (Protecting People First), Ray DuBois (Director of Administration and Management) and Mike Sullivan (Acting Program Manager, PENREN) cutting the ribbon at the Grand Opening of the MEF on November 21, 2002.

CHALLENGES

Temporary utilities for the Metro Entrance Facility project were needed to support the multiple phases of construction required for maintaining mass transit operations and access into the Pentagon throughout construction.

Given the nature of the construction and the high volume of traffic flowing through the facility each day, temporary barricades and walkways were used extensively to protect facility users from the hazards associated with construction.

MILESTONES

Phase One - The entire facility design and construction of a taxi staging area, was awarded in September 2000.

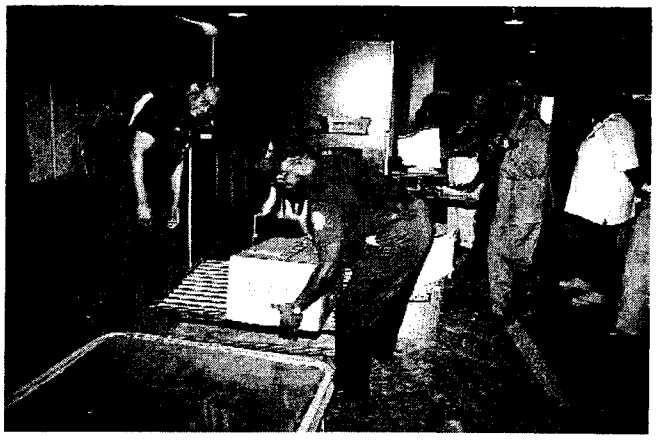
Phase Two - The option for the construction of the bus facility and the building addition, was awarded in January 2001.

Completion of Pentagon Transit Center - The new Bus Loop was opened to the public on December 16, 2001.

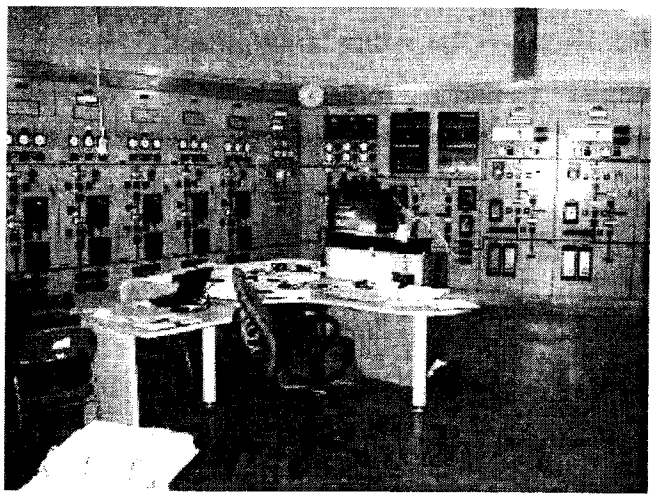
Initial Opening - The initial opening of the west side of the MEF was July 31, 2002

Grand Opening - The entire MEF was opened to the public on November 21, 2002.

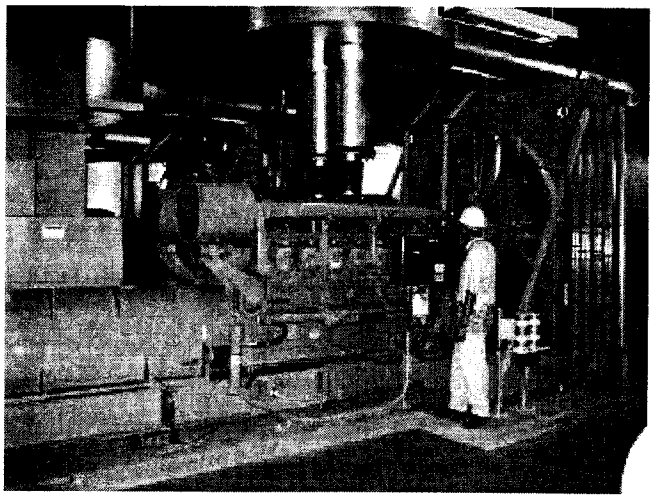
Before entering the Pentagon, commuters enter the Metro Entrance Facility from the outside (top) and pass through a security checkpoint before getting on the escalators which lead them into the building (bottom).



All packages are screened at the Remote Delivery Facility before being delivered to their Pentagon destinations.



The control room for the RDF's Emergency Power Facility.



One of the RDF's emergency power generators

REMOTE DELIVERY FACILITY

The Remote Delivery Facility (RDF) is the new 250,000-square foot shipping and receiving facility adjoining the Pentagon. Phases 1 and 2, which included the Loading Dock Area and Building Support offices, were in full operation as of January 2001. The RDF significantly improved the physical security of the Pentagon by providing a secure consolidated location to receive and screen thousands of items shipped to the building each day.

The final phase of the project was the commissioning of the physical plant, which provides emergency power and chilled water for the mission critical spaces. The major testing of these systems are completed. The project remains under budget.

CHALLENGES

The Emergency Power Facility located at the RDF conducted a full-scale actual power test on April 20, 2002. The new emergency generators successfully carried the load for an extended period of time. The new system was placed in full operations on April 21, 2002. Additionally the new chillers were tested during September 2002, under a fully loaded condition. Both of these emergency systems had to be live tested with actual building loads, which required months of coordination with the tenants and command centers. All test were completed and building operations were not effected.

MILESTONES

May 17, 1999 - Excavation work began

August 31, 2000 - Phase one was completed with the opening of the receiving facility.

December 2000 - Building support offices were complete and operational.

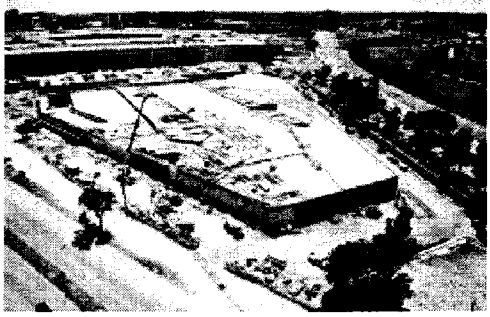
November 2001 - Roof landscaping and irrigation complete.

April 20 2002 – Emergency Generators Tested and placed online.

September 14-16 – Three Day Live Load Test of the RDF Emergency Chillers

January 2003 – Cold Weather Testing

January 31 2003 – Contract Complete

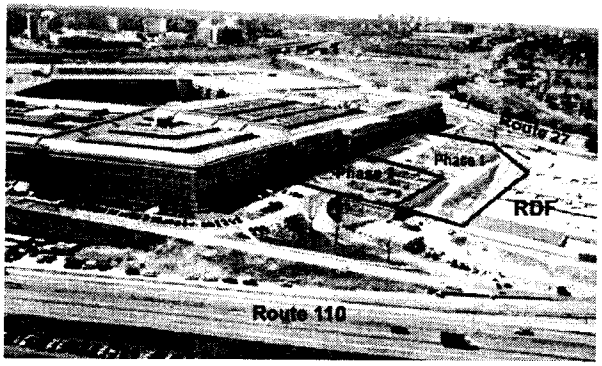


These three photographs show the RDF at its different phases of completion

PENTAGON ATHLETIC CENTER

PENTAGON ATHLETIC CENTER HIGHLIGHTS

- **Functional Full Basketball Court and Half Courts**
- **Volleyball/Badminton Courts/Multi Purpose Room**
- **Squash and Handball/Racquetball Courts**
- **Running Track**
- **Lap Pool**
- **Weight Room and Heavy/Speedbag Area**
- **Cardiovascular Room**
- **Aerobics/Cycle/Multi Purpose Room**



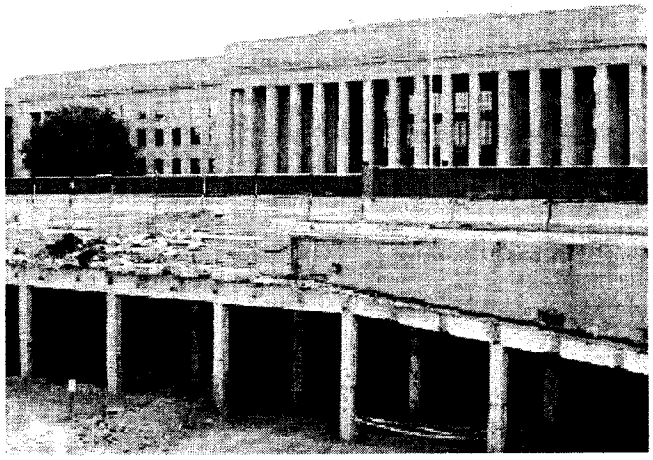
This photo shows the location and phasing plan for the Pentagon Athletic Center

This project consists of four distinct functions: an athletic center, a visual information center, a senior executive motor pool, and general office space. The new Pentagon Athletic Center (PAC) will replace the existing 55-year-old athletic facility with a larger, modern facility that will provide enhanced services necessary to meet the fitness and readiness needs of its current military and civilian membership as well as projected membership growth for the coming years. The new, state-of-the-art U.S. Army Visual Information Directorate (AVID) Visual Information Center will include an auditorium, a television studio, and a technical production center to meet the demands of the 21st century.

The constructed 127,000-square-foot facility will be located at basement and mezzanine levels below the Pentagon's Mall Terrace (Basement Segments 3A and 3B) and in the undeveloped space between the Mall Terrace and the Remote Delivery Facility, referred to as the Hundred-Foot Zone (HFZ). The project is designed to be constructed in two phases. Phase 1 will be built in the unoccupied basement/mezzanine shell space of Basement Segment 3A and in the HFZ and will include the Audio/Visual Information Center and a fully operational PAC. Phase 2 will be constructed in the area designated as Basement Segment 3B and will include the Senior Executive Motor Pool and general office space as well as the final configuration of the PAC.

The PAC project is using sustainable concepts in the design and construction of the facility. These concepts help to create a facility that is functional, durable, maintainable, flexible and safe as well as contributing to a healthy indoor environment that fosters enhanced productivity. The project is using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) to track building performance and progress toward achieving sustainable goals. Examples of sustainable materials planned for use in the facility include cork tile for flooring, composite wheat board for millwork panels,

and 100% post-consumer recycled plastic for bathroom partitions and toilets. Other initiatives include an aggressive construction waste-recycling program, a green vegetated roof, an ozone system for the pool, and energy reduction through heat exchanger technology and occupancy and light sensors.



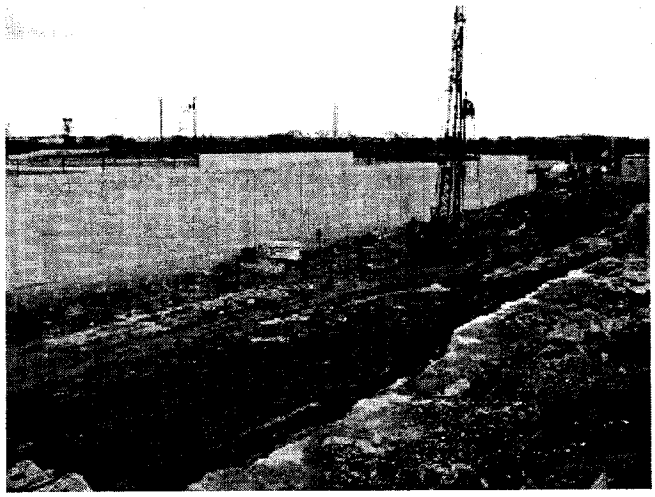
Future site of the Pentagon Athletic Center, in the 100-foot zone beneath Mall Terrace.

CHALLENGES

The contract was awarded as scheduled on September 14, 2001, shortly after the September 11 terrorist attack on the Pentagon. Subsequent to this award, a detailed evaluation was conducted to assess the need for force protection and security enhancements. Upon completion of the assessment, the Notice to Proceed was issued on December 4, 2001.

Additional challenges facing the PAC project include:

- Renovation adjacent to occupied spaces. Construction activities are inherently noisy and generate a significant amount of dust and odors. As a result, additional measures must be taken to protect and isolate the tenant from these disturbances (*e.g.*, barrier walls, working non-duty hours).
- Differing site conditions. The Pentagon was constructed in a period of 16 months. As a result, many of the original drawings are not accurate and differing site conditions are encountered on a regular basis.
- Constrained site. Limited space is available for staging materials and equipment for use in construction.
- Relocation of existing tenants prior to construction. Any delays relocating tenants has a direct effect on the ability for construction to proceed.

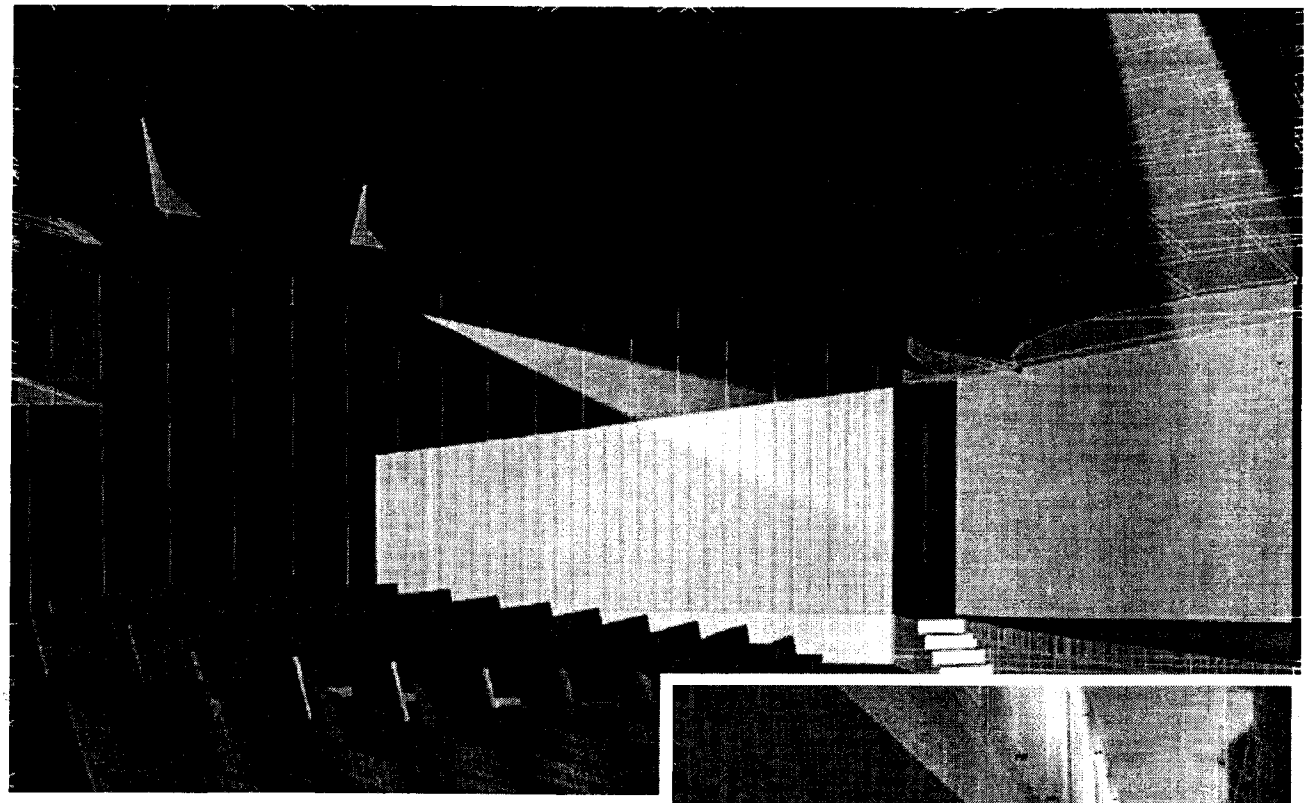


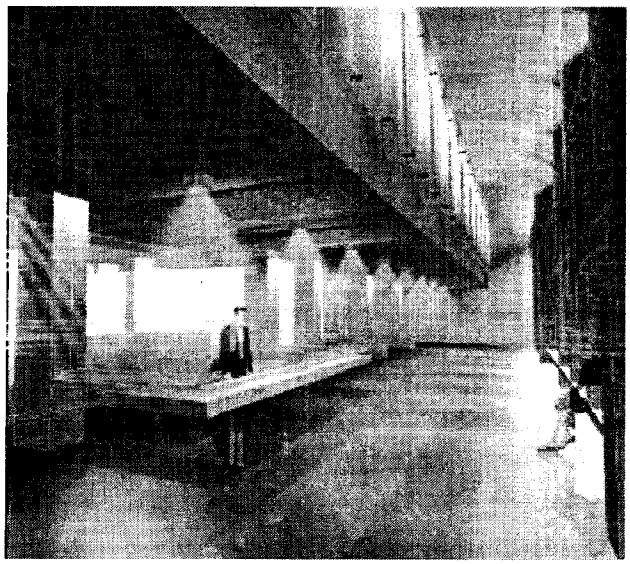
A view of the 100-foot zone from the Pentagon Mall Terrace.

MILESTONES

Workers begin the waterproofing process for the PAC on the Mall Terrace parking lot.

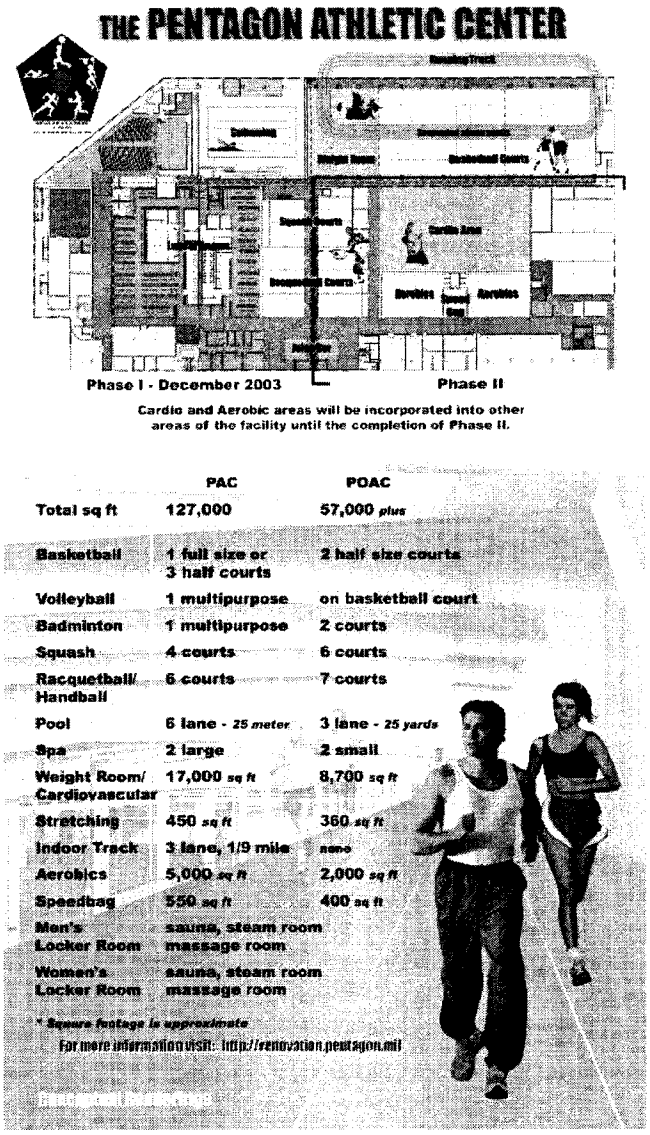
Demolition for Phase 1 began in March 2002 and was completed in November 2002. The 100% design was completed in December 2002. Phase I construction is scheduled for completion in December 2003 at which time the PAC and Visual Information Center will open for use. Because Basement Segment 3B is currently occupied and will not be vacated until late 2005, Phase 2 will begin construction in January 2006 and is scheduled to be complete in December 2006.





Renderings of two of the PAC's program areas. Above, a new auditorium. This area will be completed during Phase I of the project.

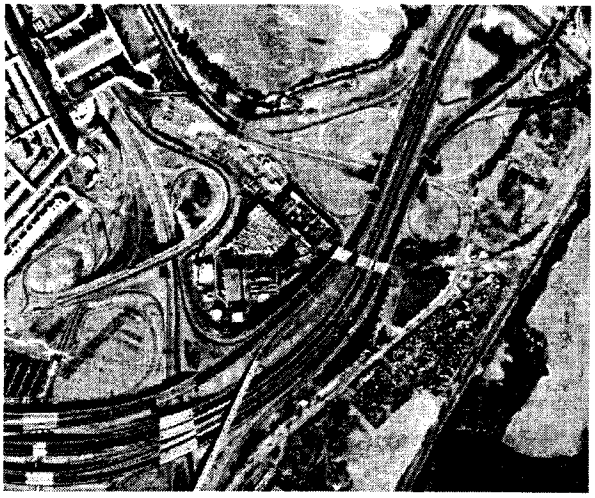
To the right the new PAC reception area, which will be completed during Phase II.



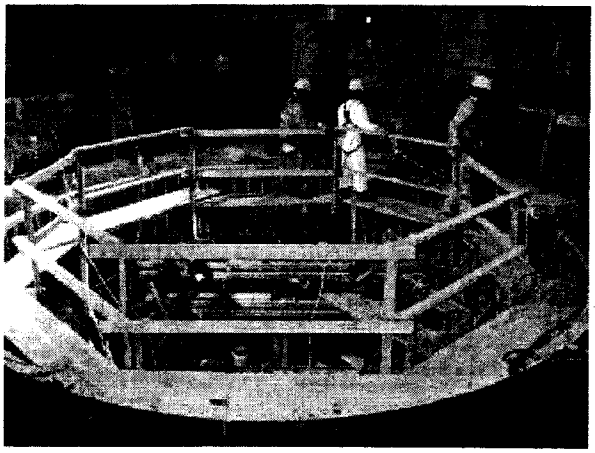
	PAC	POAC
Total sq ft	127,000	57,000 *plus*
Basketball	1 full size or 3 half courts	2 half size courts
Volleyball	1 multipurpose	on basketball court
Badminton	1 multipurpose	2 courts
Squash	4 courts	6 courts
Racquetball/ Handball	6 courts	7 courts
Pool	6 lane - *25 meter*	3 lane - *25 yards*
Spa	2 large	2 small
Weight Room/ Cardiovascular	17,000 *sq ft*	8,700 *sq ft*
Stretching	450 *sq ft*	360 *sq ft*
Indoor Track	3 lane, 1/9 mile	none
Aerobics	5,000 *sq ft*	2,000 *sq ft*
Speedbag	550 *sq ft*	400 *sq ft*
Men's Locker Room	sauna, steam room massage room	
Women's Locker Room	sauna, steam room massage room	

** Square footage is approximate*

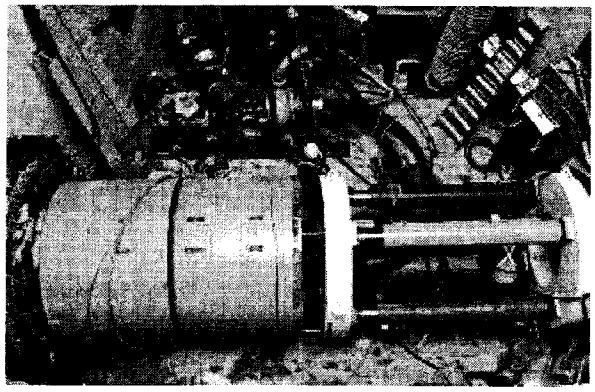
Promotional kiosks for the new Pentagon Athletic Center: The poster on the right contains a comparison between the present facility and the features that will be available in the new facility. There is also a graphic rendering of the new facility's floorplan.



Initial site planning is being done for the new screen house, which will be located adjacent to the H&RP.



A worker prepares the pump truck boom to place concrete using custom cylindrical formwork sections for the Screen House shaft liner.



Aerial view of a section the microtunneling machine being pushed through the intake shaft

PENTAGON HEATING AND REFRIGERATION PLANT (H&RP), INTAKE/OUTFALL PROJECT

The new Pentagon Heating and Refrigeration Plant (H&RP) houses the steam boilers and air conditioning chillers that provide heating and cooling for the Pentagon. Due to the plants close proximity to the Potomac River, the chilled water system utilizes river water in the condenser water loop to dissipate heat rather than a more costly cooling tower system. The original condenser water system was installed in 1942 long before the advent of computers and other electronic office systems and no longer has sufficient capacity to meet the cooling requirements of the Pentagon. The Intake/Outfall Project is rectifying this by installing a new condenser water system to the H&RP plant in parallel with the original pipe system.

The new intake line supplies chilled water from Boundary Channel Lagoon to the H&RP. After passing through the refrigeration chiller heat exchangers, the water is returned to the Potomac River at Roaches Run Waterfowl Sanctuary. A 600-foot long intake line has been micro-tunneled under a local rail line. The intake structure at Boundary Channel Lagoon and a new screen house at the H&RP are currently under construction.

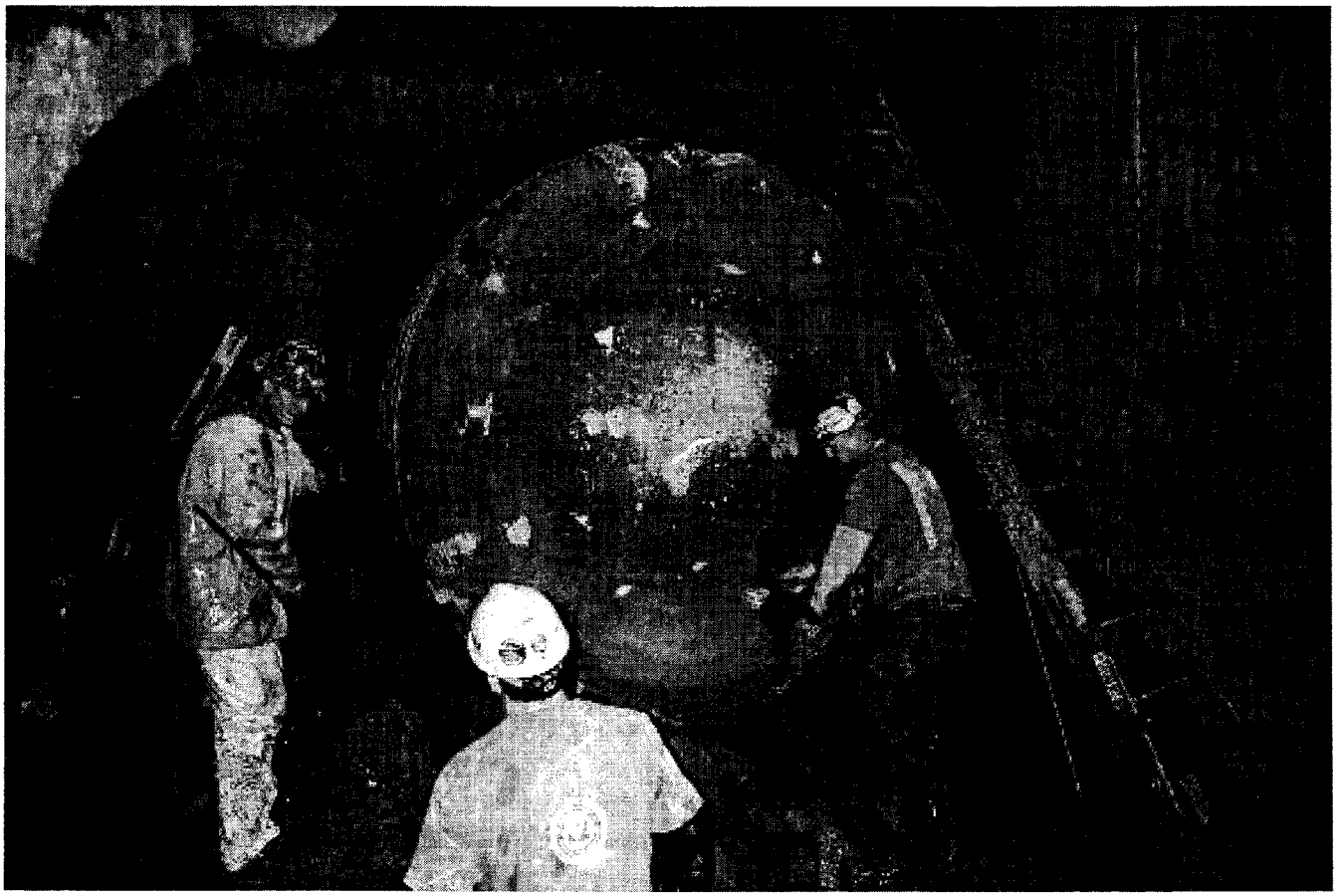
The outfall line was funded in first quarter FY 2003 and will begin construction this spring. The outfall line must avoid numerous utilities, passes under a highway and has a small portion tunnelled under a railroad. A small outfall structure is to be built at Roaches Run Waterfowl Sanctuary.

The 90 percent design submittal for Phase 1 was delivered in January 2002 and construction began in March 2002. Final design was completed in May 2002.

Phase 1 of the project is approximately 85% complete as of January 2003. This includes the intake tunnel, the intake structure at Boundary Channel Lagoon, and the Screen House structure at the H&RP. Phase 2 provides the traveling screens and other equipment at the Screen House and constructs the outfall line.

CHALLENGES

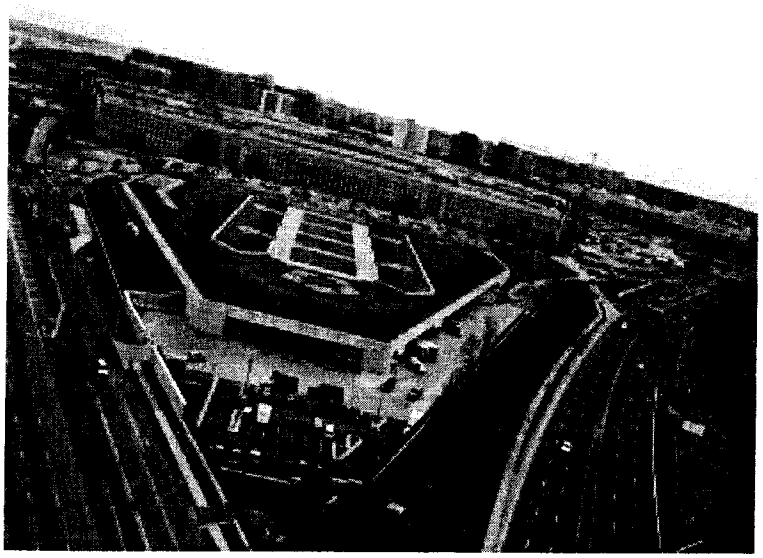
Obtaining easements and permits from the landholders and utility companies along the outfall line and locating and identifying utility lines remain an on-going challenge.



Workers standing at the end of the intake shaft as the microtunneling machine punches through. The breakthrough happened in November 2003.

ROADS, GROUNDS & SECURITY TEAM

There are currently two active projects relating to Roads, Grounds and Security. These projects are the Remote Delivery Facility Secure Access Lane (RDF SAL) and the Pentagon Secure Bypass (PSB).



Plans are underway to construct a secure delivery lane to the Remote Delivery Facility. Other future projects include a security bypass around the River Terrace.

The RDF-SAL project will enhance approach security of the Pentagon by increasing standoff distance between the Pentagon and the security station that clears vehicles for entrance into the Remote Delivery Facility (RDF). Additional measures to mitigate threat conditions include installation of fences, bollards, walls and berms along Route 27 to control unauthorized access to the Pentagon and provide additional blast protection. In order to provide these enhancements, modifications to the Route 27 / Columbia Pike Interchange are required. These modifications will be performed in a manner that minimizes traffic disruptions and improves traffic flow through the interchange, and in full cooperation with Virginia Department of Transportation (VDOT)

The PSB project will enhance approach security of the Pentagon by increasing standoff distance between the Pentagon and public roadways. This will be accomplished by the construction of the Pentagon Secure Bypass through the North sector of the Pentagon Reservation. Upon completion of the bypass all traffic currently traveling along Route 110 will be diverted onto the bypass, which will result in the extension of the secure perimeter of the Pentagon. This will also allow VA State Police to lift the truck restriction on Route 110 and cease monitoring implemented as a result of the September 11th attack on the Pentagon. This project will result in the creation of two new parking lots within the secure perimeter of the Pentagon reservation. Additionally, internal reservation traffic improvements will enhance local traffic flow and decrease security response time to incidents on the Pentagon Reservation. Measures to improve access control will be provided for, and include fences, bollards, walls and berms. These improvements will be constructed in a manner that minimizes impacts to the traveling public.

In addition, the program is reviewing the creation of an internal security response lane around the perimeter of the Pentagon, parking lot reconfigurations, and approach control for existing reservation access roads and parking lots. Additional security enhancement projects will be included in the program as needs are identified.

CHALLENGES

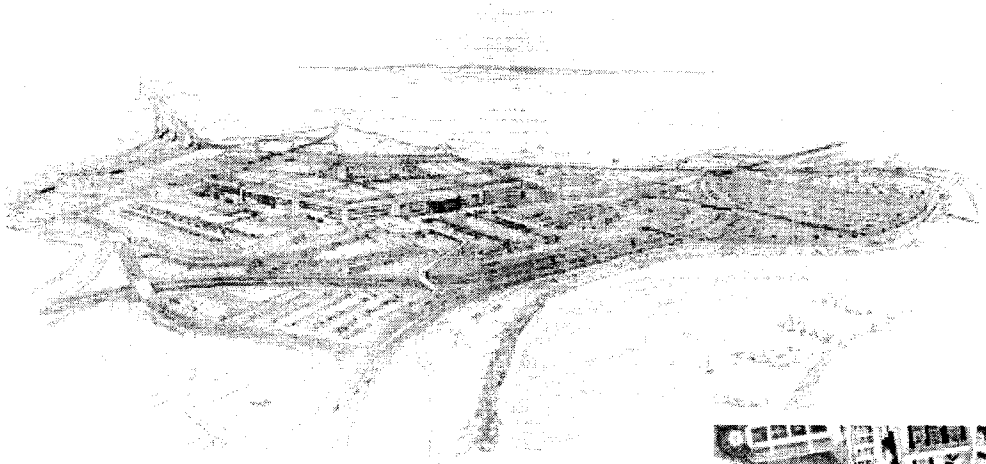
Construction phasing for both projects area exceptionally complex, due to the high demand for space currently placed upon the reservation. Both projects must be completed with minimal impacts to traffic, available parking, and other ongoing construction activities. Active security operations cannot be affected.

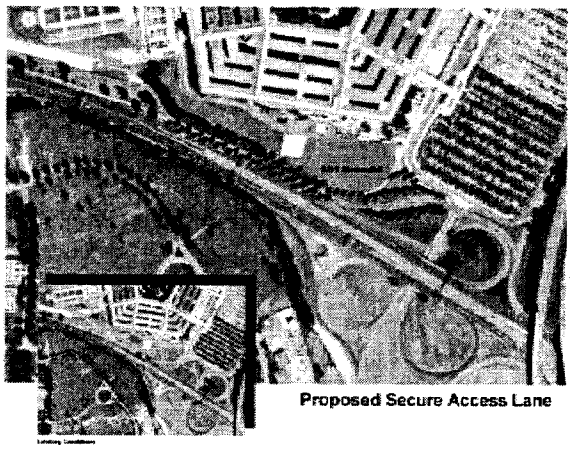
The success of this project is dependent upon continued close coordination with all affected stakeholders. These include The Virginia Department of Transportation, Arlington County, Washington Metropolitan Area Transportation Authority, The National Capital Planning Commission, The Commission of Fine Arts, the Pentagon Building and its tenants, and the traveling public.

MILESTONES

Both projects were awarded on September 24, 2002. Construction of the RDF-SAL project began in January 2003. Estimated completion of the RDF-SAL project is scheduled for October 2003. Construction of the PSB project began in December 2002. The opening of the PSB to traffic is scheduled for April 2004, and the estimated completion of this project is scheduled for September 2004.

A rendering of the proposed secure Bypass





A rendering of the RDF Secure Access Road

Pentagon Renovation Program Team Leaders and staff meet on a monthly basis for Program Review meetings. The purpose of these meetings is to bring up issues and monitor trends with Renovation Program projects.

III. PROCESS IMPROVEMENTS

Acquisition

Information Technology

- *Information Management & Telecommunications (IM&T)*
- *Alternate Sites*
- *CCSP*

Commissioning

Tenant Moves

Sustainable and Constructability Design

Program Management

ACQUISITION

Over the past year, acquisition and contracting activities have revolved around three primary objectives; the recovery of the damaged portions of the Pentagon, the continuation of the renovation efforts, and the planning for additional projects that the Renovation Program has adopted.

Phoenix Project

At the conclusion of FY 2001, numerous letter contracts were issued for the immediate recovery and repair of the Pentagon following the September 11, 2001 attack. The acquisition team was charged with determining and negotiating the definitive prices for these contracts. The principle contracts were for Architect/Engineer (A/E) services and the construction effort, which included demolition, reconstruction of over 400,000 square feet, and repair of portions not destroyed but damaged by fire, smoke, and water. The six A/E letter contracts issued immediately following the attack were consolidated into one contract, at a negotiated price. The current fixed price plus award fee amount of this contract reflectes the addition of tenant fit-out services to the contract, which facilitated the Program's goal of reoccupying the damaged E-ring of the Pentagon by the one-year anniversary of the attack. Due to their extensive experience in Wedge 1, the construction contract was issued to the contractor responsible for the original Wedge 1 renovation efforts. The original anticipated value of the reconstruction effort was definitized for a fixed-price incentive, award fee amount. The negotiation savings on both the A/E and construction contracts are a result of gaining better understanding of the project's requirements as the worked progressed in the Fall of 2001, verses what had originally been conceived and estimated to be required in the immediate aftermath of the attack. Due to tenant mission changes, numerous changes were added to the construction contract, resulting in an increase in the target price plus award fee. All effort on this contract is nearing completion.

Wedges 2-5

FY 2002 began with the kickoff of the Wedges 2-5 contract. Unfortunately, this contract also had to absorb the effects of September 11, 2001. In lieu of turning over an empty wedge for demolition, abatement, and renovation as originally contemplated, the design-build contractor was tasked to immediately recover and prepare approximately half of the wedge for tenants who were displaced by the attack, to wait for portions of Wedge 2 to be rebuilt and to rephase the renovations of the remaining portions of Wedges 2-5, so that renovation may continue and be accelerated for completion in 2010 verses 2014. The Wedges 2-5 source selection approach contemplated that the selection would result in not only a design-build contractor, but also a partner who would work with the Program to accomplish its mission. The association between offerors and the Government developed over the year long selection process and then furthered by the structure of the awarded contract have facilitated this partnership and the solution of complex issues.

Additional Projects

In addition to handling the myriad of contracts that sustain the Pentagon Renovation Program's day-to-day operations, the Acquisition and Business Group has been responsible for numerous design-build and information,

Pentagon Renovation Program Team Leaders and employees accepting a Federal Acquisition Award.

management and technology contracts. These programs include the Pentagon Athletic Center, the Intake-Outfall Project, the Metro Entrance Facility, the Navy Build-out in Basement Segment 2A1, the NIMA Build-out, the Air Force Build-out and the beginnings of Command Center Survivability Program construction efforts. The Acquisition and Business Group, made up of both Government and contractor employees, has maintained a high caliber of staff who are at the top of their profession and remain flexible to meet the changing needs and priorities of the Program. Some of these changes resulted from additional programs assigned to the Renovation Program, such as the Command Center Survivability Program's Integration and Messaging requirements, renovations at alternate sites, and the September 11 Memorial project.

Acquisition Approaches

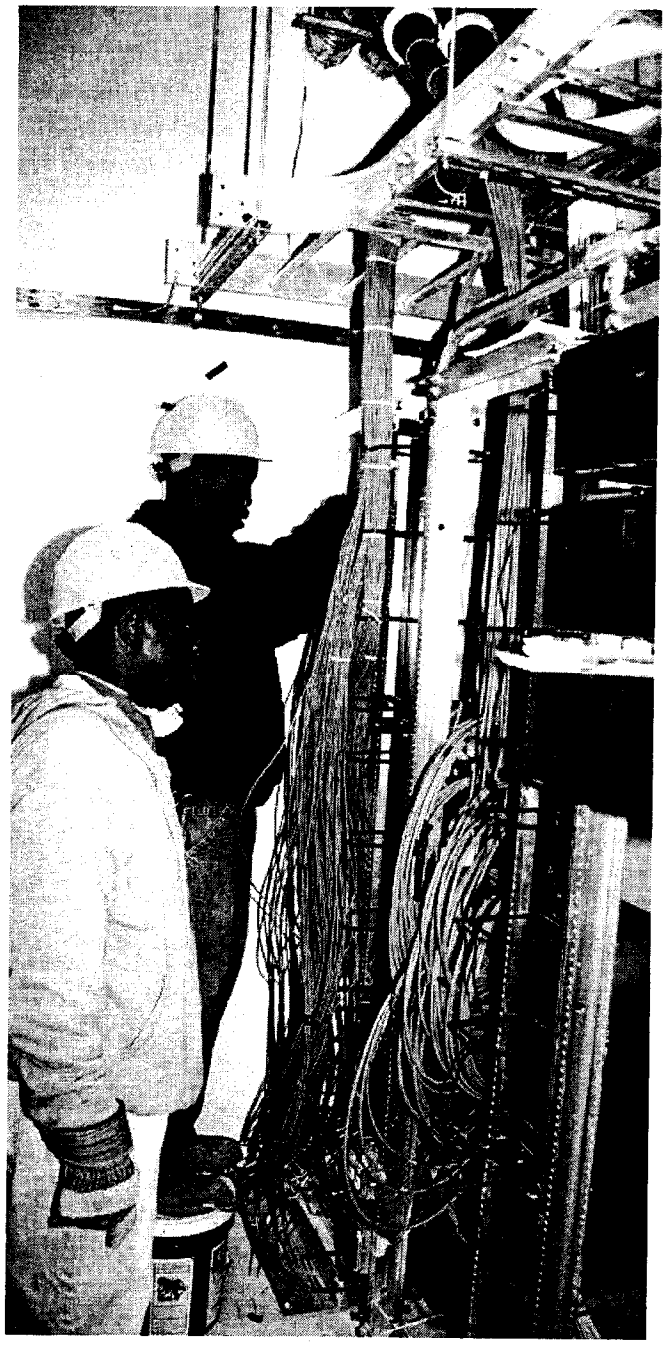
The hallmark of the Pentagon Renovation Program's Acquisition and Business Group, is the innovative approach toward source selections. The Program's source selections involve the use of techniques such as early and continuous industry involvement; emphasis on past performance, performance-based requirements, oral presentations, build-to-budget, best value, most probable cost analysis, and full and open unsuccessful offeror debriefings. Each source selection strategy is deliberately planned and completed so that the resulting contracts are awarded to the best contractor possible and are structured to encourage the partnership needed to successfully complete project requirements. Through the use of award fee contract on nearly all projects, the Program has incentivized behaviors that lead to successfully completed projects. The average award fee scoring, and therefore percent of award fee earned by the Program's contractors for CY 2002 was 96.6 percent.

Small Business Excellence

The Renovation Program continues to make concerted effort to identify and utilize small and small disadvantaged business companies. The Small Business Excellence team has developed a small business database that identifies small businesses interested and capable of performing work on the Program. This database is made available to all Renovation Program prime and large-business subcontractors as well as project leaders who identify new requirements that a small business may have an opportunity to perform. Additionally, this team has established methods by which small business subcontracting activities can be tracked and measured for each project. This has resulted in a database of meaningful, real-time information on how well each prime and large-business subcontractor is doing toward achieving its small business subcontracting goals, which industries are able to participate in the program, and which Congressional districts are being represented through the work performed by small businesses. Members of the Small Business Excellence Office participate as performance monitors in the award fee process, evaluating prime contractor performance in Socioeconomic Program Compliance, with regards to subcontracting goals and accomplishments. The Small Business Excellence Office meets monthly with each prime contractor with a subcontracting plan requirement and an award fee provision in their contract.

In June, 2003, our Small Business Excellence Office conducted a Small Business Conference with George Mason University's Procurement Technical Assistance Center Program. The conference had a total of 475 participants, including 84 exhibitors representing 36 companies and 9 government agencies, and 38 presenters or speakers. Representatives from the Renovation Program's prime contractors, SBA, SADBU Directors, Procurement Technical Assistance Program, GSA, DCAA and private sector companies conducted a total of 24 training seminars.

INFORMATION TECHNOLOGY



Telecommunications technicians install new telephone lines in Wedge 1.

Information Management & Telecommunications (IM&T)

Related to the Pentagon Renovation Program is a necessary modernization of the building's information management and telecommunications infrastructure and systems. The basic information system infrastructure in the Pentagon was installed long before the advent of personal computers, facsimile machines, video teleconferencing, and digital telephone service, and has evolved without a design plan. In 1943, when the Pentagon was built, there was one telephone for every three employees. Over the last 57 years, new information technology capabilities have emerged and the new systems have been laid on top of the old. Over time, this merging of technology has become unmanageable and not easily upgraded. As requirements emerged, facilities and systems were added with little or no regard to existing capabilities or long-term requirements. The individual military departments and agencies engineered and installed equipment and cables to meet their immediate specific needs.

The 25,000+ workers at the Pentagon require systems that will provide immediate access to local as well as worldwide networks and the tools to rapidly collect data, analyze it, and present it to decision makers in a timely manner. This requirement defines the objectives of the IM&T Project.

MILESTONES

March 2002: Three Server Farms were completed in Wedge 1. These server facilities will allow the many server requirements of all services and agencies to be consolidated into the common facilities (total 18) without the need to build hundreds of special purpose facilities throughout the building.

June 2002: Wedge 2 Renovation and Modernization (25% of Pentagon) started. The original schedule to complete Wedge 2-5 is accelerated to complete in 2010 instead of 2014

July 2002: Navy Command Center, which was destroyed in the 9/11 attack, was rebuilt and reoccupied.

September 11, 2002: A memorial ceremony was held at the site of the attack. Pentagon tenants occupied new E-ring offices with voice and data capabilities at the point of the plane's impact.

September 2002: Identified the IT pathways and infrastructure impact of awarding two Roads, Grounds and Security projects: the Remote Delivery Facility Secure Access Lane (RDF SAL) and the Pentagon Secure Bypass (PSB). Developed alternate methods to minimize the impact of these projects on the Pentagon tenants.

November 2002: The Metro Entrance Facility Project is complete. IM&T provided all the phone and data services to support the public's entrance to the Pentagon, Pentagon Tour Office small theater, informational displays by the services, and the Badge Office.

December 2002: Wedge 1 Consolidated Radio Room (CRR) is complete. The CRRs, one per Wedge, replace the 130 radio systems distributed throughout the Pentagon.

February 2003 - All of the areas damaged in the attack are completely recovered, rebuilt and reoccupied. Wedge 1, 20% of the Pentagon, will have common backbone with higher bandwidth capability. The Renovation Program's IM&T team continues implementation of the distributed telephone switching architecture, which employs fiber optic cabling to facilitate redundancy and survivability of voice services while eliminating massive pathway and copper cabling requirements in the building.

Alternate Site Team

In the aftermath of the 9/11 terrorist attack on the Pentagon, OSD and other services and agencies quickly moved to alternate sites for continuity of operations and

IM&T Security Improvements

Basic Concepts/Goals

- Provide dispersion and multiple nodes (points of presence) for selected, vital command communications systems to enhance survivability from attack.
- Provide smart technology with capacity to route command communications systems around a breach from attack in the system.

Systems selected for survivability enhancement

- Voice Telecommunications
- Network (Electronic Transport Systems)
- Data (Electronic Storage & Retrieval Systems)
- Messaging (Electronic Communications Systems

continuity of Business. As a result their reliance on Information Technology was highlighted.

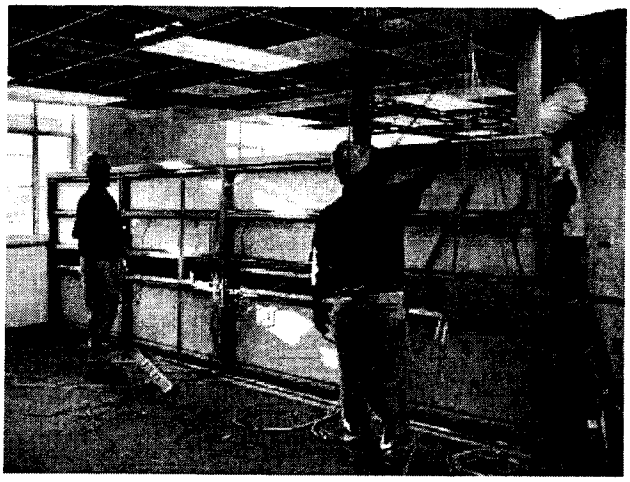
The Department of Defense Continuity of Operations Integrated Network (DCIN) supports a classified program that enables an Enterprise Solution to ensure availability of mission critical information (email, applications, databases, and other automated tools) to support Command Centers and Continuity of Business (COB) essential operations.

The Pentagon Renovation Program has been tasked as the Implementation Manager for DCIN. In this capacity, PENREN provides acquisition, engineering, installation and test services for the Information Technology.

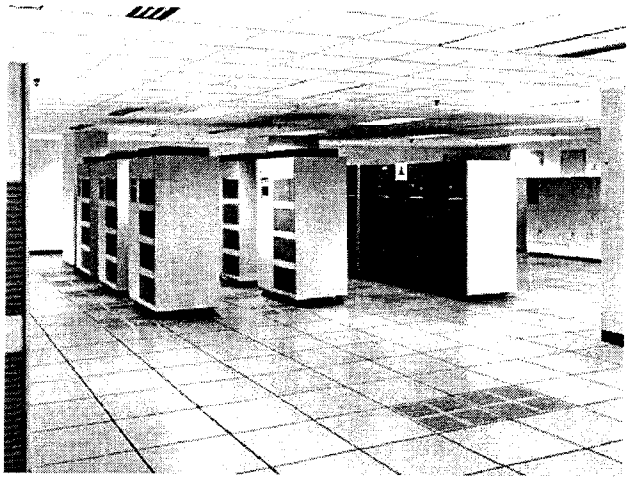
Command Communications Survivability Program (CCSP)

The Department of Defense (DoD) has established a need for the CCSP under the auspices of the Pentagon Renovation Program. The Government intends to award a contract for a CCSP Systems Integrator, who will be responsible for making necessary changes to the Information Technology (IT) infrastructure in the Pentagon and selected DoD facilities associated with the Pentagon.

These changes will facilitate the acceleration of planned renovation of Pentagon Common Information Technology infrastructure. The goal of this Program is to ensure redundancy, survivability, recoverability, manageability, availability, scalability and security for four main communications areas. These four main areas are Networks, Mainframe/Servers, Voice, and Messaging. The CCSP Systems Integrator will be responsible for Networks, Mainframe/Servers, and Voice requirements (specifics for each area are discussed below). The Messaging and Construction requirements are being implemented under separate acquisitions. The CCSP Systems Integrator will be responsible for coordinating with the Messaging and the Construction contractors. This Program affects multiple service agencies, and up to 40,000 users. The performance period is expected to last through FY2005.



Workers installing data lines into the spinewall furniture in Wedge 1



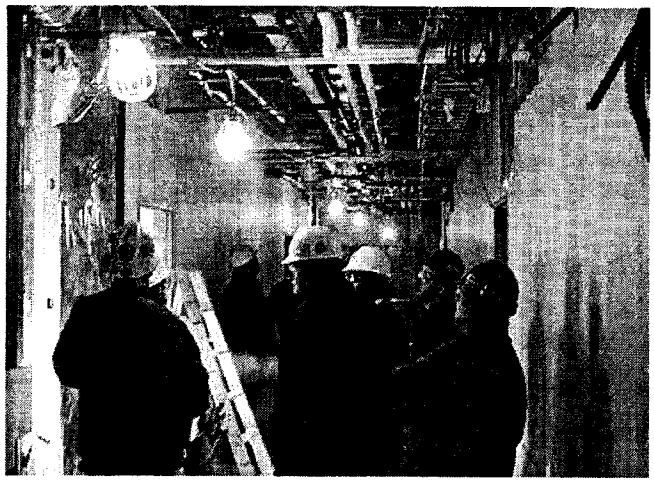
A consolidated server room in Wedge 1.

Installing phone lines in Wedge 2

COMMISSIONING BENEFITS

- **Improved system performance**
- **Improved operation and maintenance**
- **Improved indoor air quality**
- **Improved energy efficiency**
- **Reduced warranty callbacks**

Above, workers testing a Wedge 1 electrical vault. The original vault was destroyed in the September 11 attack. This particular test measured the integrity of the wiring that feeds the vault. Below, Wedge 2 Quality Assurance Inspectors on a weekly project walk-thru.



COMMISSIONING

Commissioning is the process verifying and documenting that the performance of building systems achieve the design intent and meet the owner's functional and operational needs.

The primary goals of Commissioning are:

1. *Identifying and documenting Owner needs and requirements of the facility*
2. *Verifying that designed systems are commensurate with Owner needs*
3. *Verifying that systems installed are operable and maintainable*
4. *Testing of systems to verify that they are performing optimally*
5. *Verifying that design intent, installation, Operations and Maintenance requirements are well documented*
6. *Training operators and facility staff to ensure maintainability.*

Commissioning goes beyond testing, adjusting, and balancing and traditional inspection services. Commissioning involves functional performance testing to determine how well building systems such as fire safety, mechanical and electrical systems, work together. Commissioning seeks to determine whether equipment meets a facility's operational goals or whether it needs to be adjusted to improve efficiency and overall performance. These activities are not, as many owners and managers believe, part of the typical design and construction process or part of standard operations and maintenance procedures.

IMPLEMENTATION STATUS

The integration of the Commissioning process into Pentagon Renovation Projects was accomplished in

phases. Seven major projects incorporating Commissioning are: the TRICARE Health Clinic, Wedge 1, the Remote Delivery Facility, the Metro Entrance Facility, Intake/Outfall, the Physical Fitness and Readiness Facility and Wedges 2-5.

The TRICARE Clinic was completed in February 2000, with commissioning incorporated near the end of core and shell construction. Final commissioning close out documentation and warranty were completed in 2001.

The Wedge 1 core and shell construction phase was just beginning when commissioning activities began. Commissioning included building system design reviews and equipment and product data submittal reviews. As with the TRICARE Clinic, commissioning activities included reviews of operations and maintenance manuals, training plans, equipment startup checklists, functional performance tests, and "as-built" drawings. For Wedge 1, operations and maintenance manuals were expanded upon, providing detailed system descriptions tying together various component O&M manuals. The Wedge 1 commissioning also included execution of equipment startup checklists and functional performance tests for life safety, mechanical, and electrical systems.

The Remote Delivery Facility is the first Pentagon Renovation project to start commissioning with the onset of construction. Commissioning here began with technical reviews of the Conceptual Design, Basis of Design, and the Design Intent documents, and continued throughout all design phases and into the construction phase. Commissioning activities included reviews of operations and maintenance manuals, training plans, equipment startup checklists, functional performance tests, and 'as built' drawings.

For the Metro Entrance Facility, Wedges 2-5, Intake/ Outfall, and Physical Fitness and Readiness Facility projects the commissioning process was also fully integrated from the start. Commissioning activities here began with technical reviews of the Conceptual Design

THE GOAL OF COMMISSIONING:

"Commissioning seeks to determine whether equipment meets a facility's operational goals or whether it needs to be adjusted to improve efficiency and overall system performance."

SCOPE OF COMMISSIONING SERVICES

Commissioning at the Pentagon includes the following building systems:

1. Normal Power Supply System
2. Emergency Power Supply System
3. Standby Power Supply System
4. Life Safety Systems
5. Fuel Oil Leak Detection System
6. Waterproofing System
7. Heating, Ventilation, and Air Conditioning Systems
8. Direct Digital Controls Systems (Energy Management and Controls Systems)
9. Fire Alarm/Fire Protection and Fire Suppression Systems
10. Electrical Distribution System
11. Building Envelope (including energy efficiency)
12. Potable Water System (including cross connection control/backflow prevention)

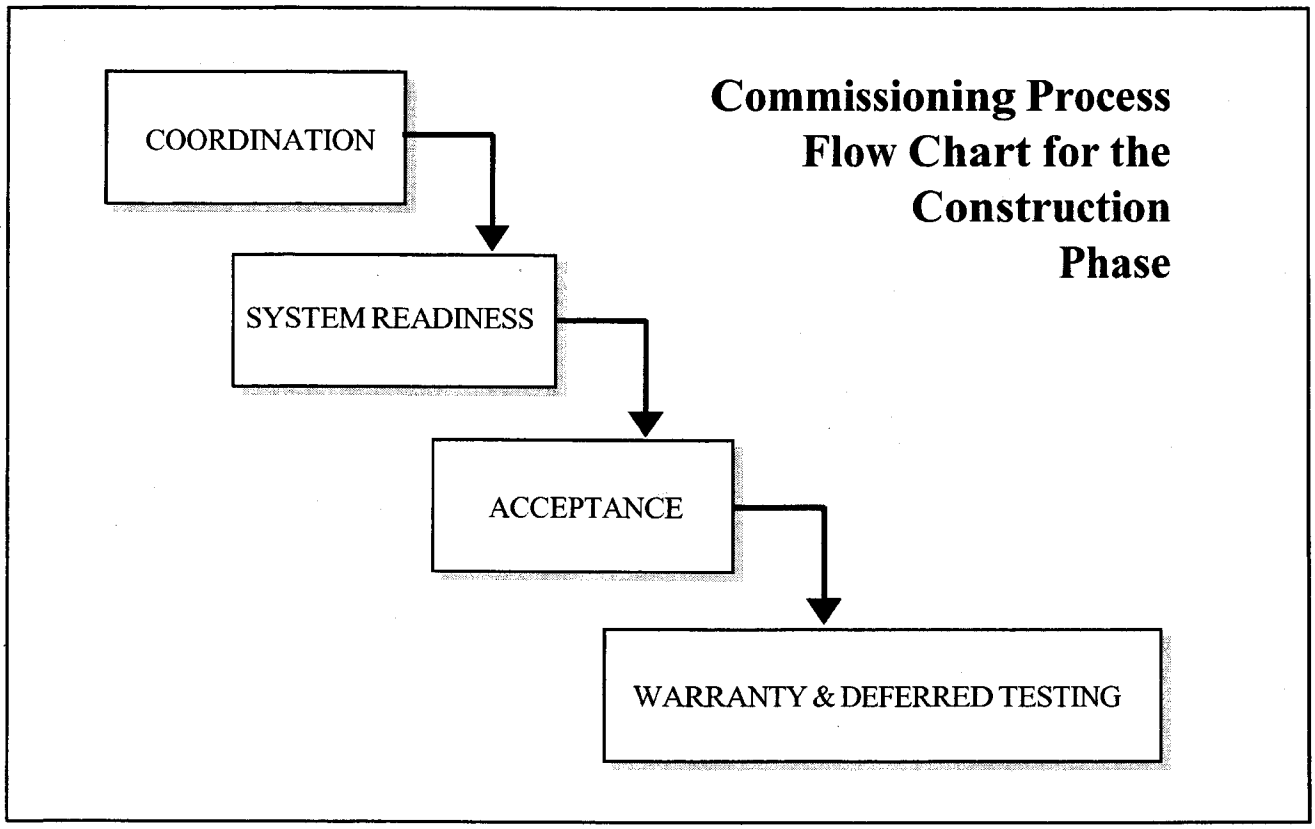
and RFP design criteria. After award of each project, commissioning has followed the same path laid out by the Remote Delivery Facility, incorporating lessons learned from the TRICARE Clinic, Wedge One, and the Remote Delivery Facility.

CHALLENGES

Due to the September 11 attack, the commissioning effort at Wedge 1 had to be modified to incorporate retesting of systems. Some areas affected by the blast or subsequent fire, smoke, and water damage had to be retro-commissioned.

REQUIREMENT

Executive Order 12902, March 8, 1994, Energy Efficiency and Water Conservation at Federal Facilities, Section 306, requires that a facility commissioning program be established for all new or renovated buildings and refers specifically to ensuring that performance standards, as set forth in 10 CFR 435, are met.



TENANT MOVES

Due to logistical constraints presented by the building, its security requirements, and the necessity to minimize downtime and disruption to employees' daily activities, the Renovation Program has created an innovative process to relocate tenants while maintaining the renovation schedule. To accomplish these tasks, the Pentagon Renovation Program established a Relocation Planning Team (RPT), whose primary responsibility includes:

Furniture and office equipment lining a corridor in the E-Ring, ready to be placed into renovated office spaces. These were the first Phoenix Project offices to be reoccupied.

- **Providing agency-specific relocation checklists,** which give the tenants an "itemized" list of tasks to be accomplished prior to, during, and after, the move. In addition, each move involves:

  - *A Move Representative Note book detailing specific task orientated requirements, Relocation Handbooks, which instruct tenants on packing and labeling procedures and "Move Packets", which include a quick reference for new phone system operation, emergency egress map, new lighting and heating instruction guide, the latest copy of the Renovator which updates the tenants on current renovation milestones;*

  - *Post-move questionnaires are provided, which give the tenants an opportunity to provide the Program feedback on the relocation process, new space, furniture, systems, etc. These documents and forms have been made accessible to all Pentagon employees electronically, thus saving the government printing costs.*

- **The Establishment of a Post-Move Help Desk**

  The Post Move Questionnaire created a lot of tenant feedback pointing out several areas of concern by the tenants. The comments ranged from requests for structural changes, phone training on the new system to minor touch up that generally occurs in any move. Most of these change requests would be performed by the multitude of contractors and subcontractors that operate and maintain the building while under construction and prior to the transition of tenant space to the Government. The Program needed to stream line this information into a manageable system in order to complete the requests in a timely manner, hence the establishment of a Post Move Help Desk. The Post Move Help Desk is manned 5 days a week, 8 hours a day by two RPT staff personnel.

  The establishment of this Help Desk has greatly increased the efficiency and timeliness in completing Post Move tenant service request. The Help Desk is an information conduit between the Program and various contractors required to perform the necessary work. The Help Desk personnel hold weekly coordination meetings with the many agencies and contractor to assure adherence to building policies, codes and completion of task in a professional, efficient and timely manner. The Help desk has been a valuable and important addition to the on going renovation of the Pentagon.

- **Coordinating the logistical and security requirements between the movers and the affected agencies,** such as the Defense Protective

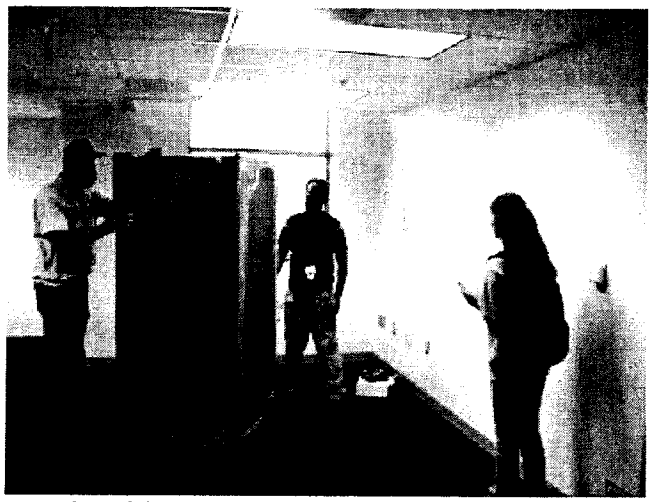
Service, Information Management and Telecommunications, the Dockmaster, and the Pentagon Building Management Office.

The RPT has saved the Government approximately 25-percent, when compared with industry standards through very comprehensive up-front planning and an intimate understanding of the dynamics of the Pentagon itself.

The decision to procure moving services through a multiple award contract has enabled flexibility in move assignments, maintained move contractors in a consistently competitive environment, and removed constraints on resources while still ensuring a prudent expenditure of funds. Some notable accomplishments are:

- Negotiating cost for each move and overseeing the move to ensure adherence to the Government's requirements.
- Tracking, coordinating and overseeing the delivery and installation of furniture, furnishings, and equipment for tenants being relocated to renovated space as well as coordinating and overseeing the removal of surplus items. This is accomplished with a small disadvantaged contractor.
- Coordinating Pre-Move and Post-Move cleanup of the new space. This is also accomplished with a small disadvantaged contractor.
- Relocation of approximately 14,800 personnel from various wedges to external swing space locations, as well as to internal Pentagon locations.

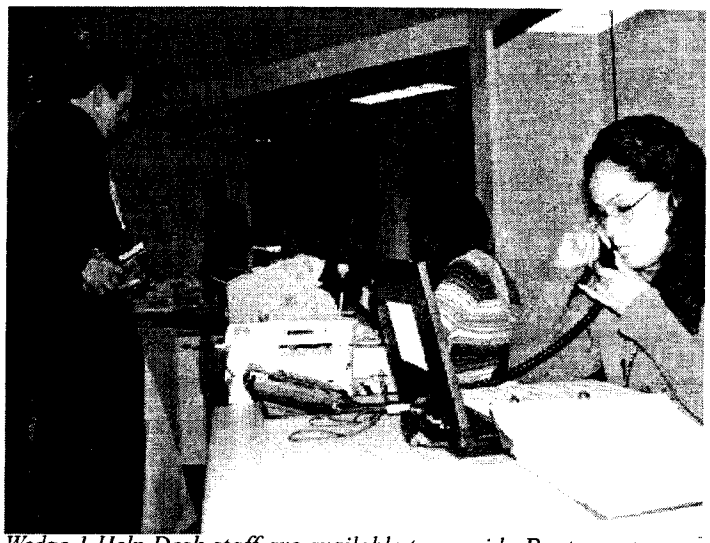
The process developed by the RPT has further saved the government money by establishing moving service contracts that allow the Program to handle activities that may not usually fall under a mover's purview. For example, the movers can provide cleaning services, subcontracting services for specialty equipment with warranties that require a certain vendor to perform the services, personal computer decertification and recertification services, the handling of hazardous material, etc. This flexibility allows the Program to handle a variety of tenant requirements.



A member of the Relocation Planning Team (far right), supervising the installation of office furniture in the Wedge 1 E-Ring.

Understanding the difficulty in adhering to schedules of the magnitude the Pentagon renovation requires, the Program procured 104,000 square-feet of warehouse space to temporarily store new construction materials, furniture, furnishings, and information technology equipment in support of the renovation.

To many, the successful relocation of the tenant to temporary or permanent space represents the end of the process. For the Program, however, the activities following the relocation are critical to the overall success of the renovation. The space vacancy and turnover process has been a significant factor for the renovation schedule. The coordination between the Renovation Program and all stakeholders to decertify a space for demolition has been honed into a finely tuned process. The Program is responsible for removing the surplus furniture, furnishings, and equipment from vacated tenant space. To do this, the Program must inventory, identify surplus, and present to potential customers any furniture, furnishings, and equipment not being relocated to renovated space. Based on the condition of the surplus



Wedge 1 Help Desk staff are available to provide Pentagon tenants with an immediate response to move-related questions.

items, the Renovation Program has to determine, in accordance with applicable regulations, if the items will be presented for reuse within the government, donated to charitable organizations or deemed excess property and officially disposed of. The Renovation Program must then coordinate with the various other partners in order to allow the disconnection of utilities, removal of secure lines, telephone lines and equipment, etc. The Program then coordinates a trash removal activity with its cleaning contractor in order to officially turn over a space to the demolition and abatement contractor to begin renovation. This myriad of coordination activities have been reduced to a one-month duration after tenant move-out.

POST-SEPTEMBER 11 ACTIVITIES

The Relocation Planning Team and its vendors responded quickly and effectively, assisting the Pentagon occupants with:

- Removing salvageable furniture, furnishings and equipment from the damaged areas in the Pentagon and placing them in short term storage.

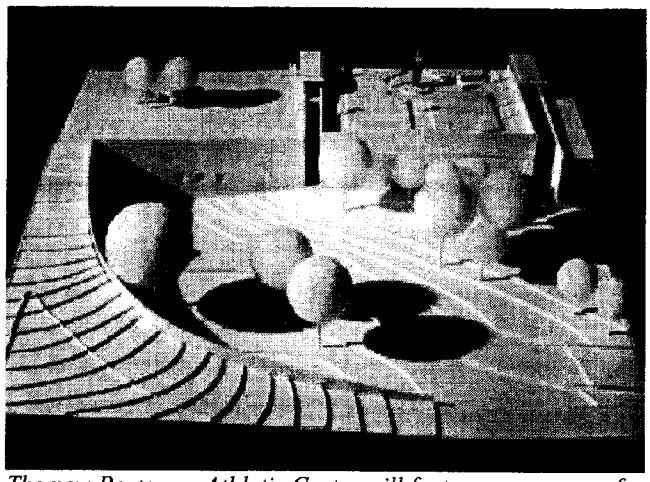
- Conducting around the clock moves in support of displaced tenants due to the incident.

ACTIVITY STATUS - PROJECTS IN DESIGN

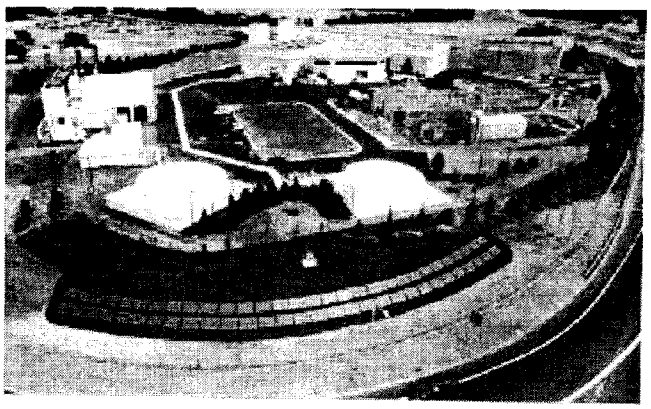
The Renovation Program has a back-to-basics approach for all activities. Based on the lessons learned from the Wedge 1 and subsequent moves into swing space and new permanent space, the Program will perform the following activities by simplifying our move process, and begin to work closely with the design-build contractor in support of the following activities:

- **FY 2003** – The Renovation Program will handle the furniture tracking, delivery, and installation oversight, as well as the relocation planning, moves, and surplus removal services as it relates to the occupancy of Wedges 2 and swing spaces. The renovation will continue to provide pre and post move cleaning and minor repair services for the renovated Pentagon space. Again, this will be accomplished using a small disadvantaged business. In addition, the Renovation Program will continue to use its three moving services contractors in support of the moves.

During construction of the new bus facility recycled materials were used. Recycled concrete was used for the base material of all roadways and sidewalks



The new Pentagon Athletic Center will feature a green roof, which provides outdoor garden space, improved insulation, a natural water filtration system and reduced storm water runoff



Solar array panel testing site used to increase energy efficiency. At max load the solar panels can produce 30kw/hr.

SUSTAINABLE CONSTRUCTION

The Integrated Sustainable Design and Constructability (ISDC) Team became a viable part of the Pentagon Renovation Program in 2001. In 2002, the ISDC Team formulated strategy and implemented projects to integrate and balance sustainable design issues with force protection measures necessary to protect the Pentagon. In addition, the complex nature of PENREN projects required the ISDC Team to incorporate sustainable design into the overall acquisition and management strategy of the Program. The acquisition strategy includes innovative performance-based contracting, and design-build methodology.

Several force protection measures are complementary to our sustainable construction efforts. For example, we are examining a coating to spray on the inner walls of the Pentagon to provide blast-resistance. This would also provide extra benefits by improving the airtightness of the building envelope, which would help save heating and cooling energy. A tighter thermal envelope would, in turn, provide added protection against airborne chemical/biological agents released outside the building (or help contain interior releases). Another example of energy-savings are due to the blast-resistant windows that are 50% more energy efficient and contribute to the building's tighter thermal envelope. Another example is the use of photoluminescent signage to allow safe egress of personnel during a fire or blast event. These signs will be placed along the floorboards and lower wall areas to aid in wayfinding because the conventional "EXIT" signs are too high to see and are obscured by smoke if a fire is blazing. The signs will not use any power, saving energy in addition to adding to the safety of our personnel. New climate control systems that provide improved indoor air quality and more efficient heating and cooling, as well as a means to control smoke and chemical/biological agent proliferation.

The following projects are attempting to obtain Leadership in Energy and Environmental Design (LEED) certification from the United States Green Building Council (USGBC) over the next ten years: (1) the Metro Entrance Facility (MEF); (2) Wedges 2-5; (3) the Remote Delivery Facility; (4) the Intake/Outfall Project (5) the Physical Fitness and Readiness Facility; and (6) the Phoenix Project. PENREN uses the LEED Rating System as a way to set performance standards and measure the sustainable design success of its greening initiatives.

The following sustainable design goals are LEED-based and implemented on all current PENREN projects:

1. Use resources efficiently and minimize raw material resource consumption, including energy, water, land, and material, both during construction and throughout the life of the facility.
2. Maximize resource reuse, while maintaining financial stewardship.
3. Move away from fossil fuels towards renewable energy sources.
4. Create a healthy and productive indoor environment for all who use the facility.
5. Build facilities of long-term value.
6. Protect and, where appropriate, restore the natural environment.

Not only are the projects fully supporting sustainable design in principle, but each project team is continually addressing many challenges and providing tools to aid in the design and construction/renovation process. In addition, the Pentagon Renovation Program Integrated Sustainable Design and Constructability Team won the 2002 Presidential Award for Leadership in Federal Energy Management for the "Outreach" category. OMB hosted the awards ceremony in support of President Bush's National Energy Policy (NEP), a nationwide plan to modernize conservation efforts, accelerate the protection of the environment and increase the nation's energy security, promoting Executive Order 13123. Highlights of the Pentagon Renovation Program's award-winning energy-saving initiatives include:

PENREN's design-build approach and acquisition strategy use performance requirements including establishment of energy budget, measurement and verification program, and comprehensive commissioning to achieve long-term energy efficiency goals (as set forth in EO 13123).

PENREN has set goals to reduce greenhouse gas emissions by 35% through use of environmentally-preferable building materials and products.

The Pentagon Renovation Program's ISDC Team is using sustainable construction methods and the US Green Building Council's LEED to ensure compliance with:

- Executive Order 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*, Executive Order 13123,

- *10 CFR 435 - Energy Performance Standards for New Buildings - Mandatory for federal buildings*

- *Comprehensive Procurement Guidelines (CPG) - 40 CFR 247 buy recycled*

- *Executive Order 13123 - Greening the Government through Efficient Energy Management - Sustainable Design and Development for Government Agencies*

- *Executive Order 13101 -Greening the Government*

- *Affirmative Procurement Guidelines - 42 USC 6962 For Department of Defense Agencies - Meet OSD reporting requirements - Diversion Rates, Open*

- *Enforcement Actions, Greenhouse Gas Emissions, etc.*

- *National Environmental Policy Act - Environmental Impact Statements/Assessments*

Integrated Sustainable Design and Construction Team

Sustainable Construction

Building Efficiently for the next 50 years

What is Sustainable Construction and why we should do it

"Sustainable practices are an investment in the future. Through conservation, improved manufacturing, recycling, reduced, reuse and new materials and equipment, we can meet today's needs without compromising the ability of future generations to meet their own." – Air Force Facilities Guide

The overall goals for Sustainability include:

- Using resources efficiently and minimizing raw material resource consumption, including energy, water, and and materials, both during the construction as well as throughout the life of the facility
- Maximize resource reuse.
- Utilize renewable energy sources.
- Create a healthy working environment
- Build facilities of long-term value.
- Protect and/or restore the natural environment.

What is Constructability?

Constructability refers to the ease of construction attained through the optimum use of construction knowledge and expertise in planning, engineering, procurement and field operation to achieve overall project objectives.

Examples of how sustainable design and construction practices are making PenRen projects easier to build!

Fan Powered Induction Units

Cut the amount of ductwork required by almost half by allowing the return air to be taken directly from occupied space

Reduced the number of mechanical rooms from 118 in Wedge 1 to only 9 in Wedge 2

Allowed for maximum use of daylight by raising the outer ceiling height by 23 inches.

Commissioning Agent

involvement throughout design

Results in ...

A more efficient Cx process
Ensures system performance
Less delays during closeout
Facilitates building turnover

Re-use of building materials

The PAC is reusing the existing limestone veneer

Smartwall System

Modularized and fabricated offsite

Reduces material waste and field work

Allows for ease of installation

BUILD SMART Wedge 1 PENREN MEP

If you have more examples we could read more of, Please contact your ISDC team member or email us

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Sustainability Highlights from PenRen Projects

Wedge 1

- 70% of debris was recycled
- Increased energy efficiency of windows
- Removed of 25 million pounds of asbestos
- Removal of lead paint, mercury, PCBs
- Contaminated soil cleaned

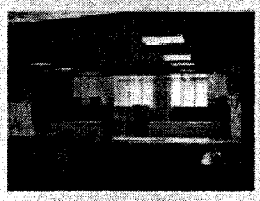
Remote Delivery Facility

- Registered as LEED pilot project
- Green vegetated roof
- Indigenous vegetation and water re-use
- Building control system for energy efficiency and indoor air quality
- Elimination of unnecessary materials

Metro Entrance Facility

- At least 50% of waste was diverted from landfill
- Electric vehicle outlets installed
- Vegetation covers ½ the open space restoring life back to the site.
- High reflectance Energy Star roofing installed
- 20% savings in energy consumption
- Over 50% of the building materials were assembled within 500 miles
- Over 50% of the materials contain recycled content
- 21% of wood-based materials were FSC Certified
- Permanent CO2 monitoring system installed

Wedge 2-5



- 90% of all concrete and metal diverted from landfill
- Using high efficiency T-5 and T-8 lights
- Recycled gypsum wallboard
- Highly sustainable recycled content carpet
- Recycled content ceiling tile
- Universal space plan allows for easy space reconfiguration, reducing future construction waste

Pentagon Athletic Center

- Aggressive construction waste recycling program
- Green vegetated roof
- Vegetation covers 1/2 the open space restoring life back to the site
- Rapidly renewable materials (bamboo and cork flooring)
- Bathroom partitions made from 100% post consumer recycled plastic
- 20% of fly ash was added to concrete
- Composite wheat board for millwork panels
- Ozone system for the pool
- Energy recovered through heat exchanger technology, occupancy and light sensors
- Permanent CO2 monitoring installed
- Low emitting materials used

The Integrated Sustainable Design Team works hard to ensure that the construction industry and the public at large stays informed of PENREN efforts in the sustainable construction arena. This is a sample of the informational handouts distributed by the team at various meetings and events.

http://renovation.pentagon.mil/sustainabledesign.htm

PROGRAM MANAGEMENT

The Pentagon Renovation Program (PENREN) is known as an organization with a proactive approach to identifying challenges and finding innovative and effective solutions. With the events of 9/11 and the subsequent rebuilding effort now complete, PENREN is looking towards the completion of Wedges 2-5 while planning for future crises situations. As PENREN moves towards renovation completion the Program is developing a systematic approach to personnel reduction. By assembling a dedicated internal Security Team and creating a detailed Continuity of Operations (COOP) Plan, PENREN is prepared to handle unforeseen events in an efficient and effective manner. In addition, PENREN's success has resulted in continued media attention and public interest. Over the past year PENREN has facilitated and hosted several large events drawing major media attention as well as participation from senior DoD and political leaders. PENREN personnel are frequently requested to speak at local, national and international conferences as experts in the fields of program management, IT, constructio management, cost management, acquisition reform, sustainable design, force protection and leadership strategies.

Rewarding excellence and innovation is one of PENREN's philosophies. Above, Acting Program Manager Mike Sullivan presenting an award to a Program employee.

Communications Team Leader Brett Eaton giving a briefing to a foreign military representative.

DRAW DOWN PLAN

With the recognition that PENREN personnel are the Program's most valuable asset, people are also the Program's most costly expenditure. PENREN is continuing a proactive self-assessment begun under the "Back-to-Basics" initiative in 1999. The draw down plan streamlines the organization by systematically "rightsizing" personnel mainly through attrition without detriment to the Program's mission. The events of September 11, 2001 halted the original draw down plans, which became more complicated due to the various types of projects and funding managed by PENREN. These included the core renovation mission, 9/11 attack recovery-related operations and projects undertaken as the DoD construction agent. While attack recovery operations are near completion and the renovation of Wedges 2-5

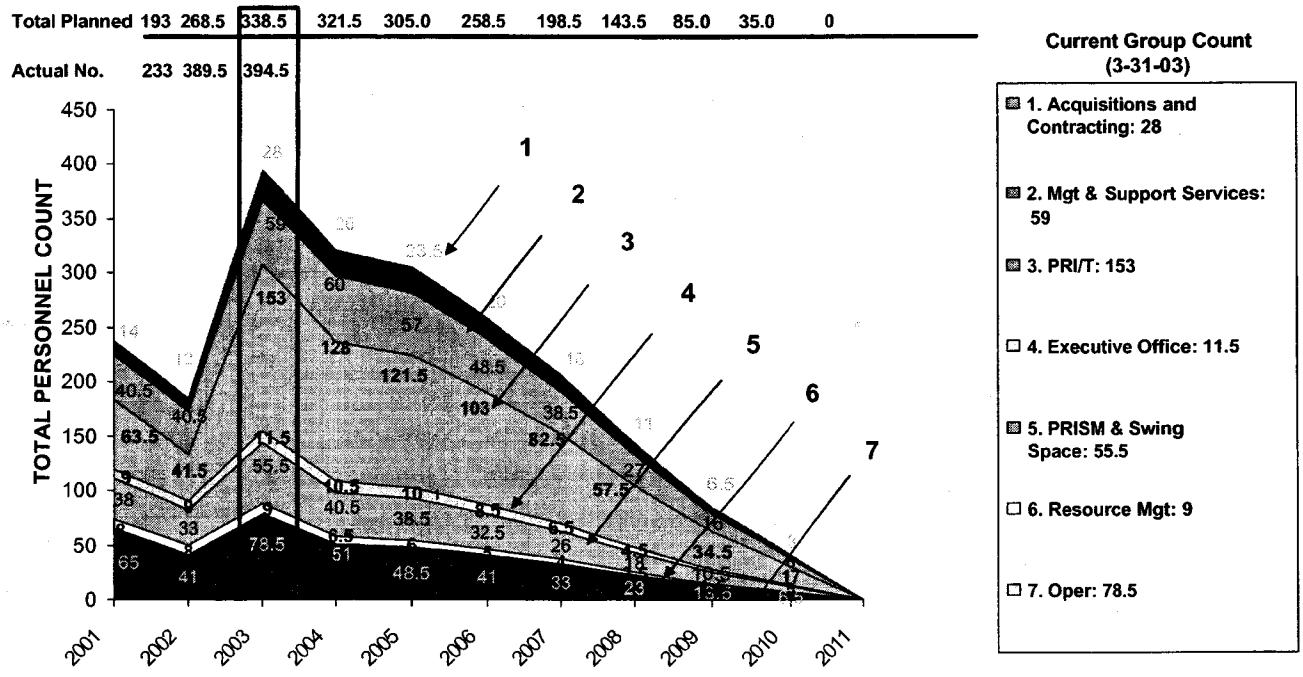
One of many foremans' meetings held at the Phoenix Project job site prior to September 11, 2002.

has a definitive deadline, construction agent projects continue to grow in number and scope.

SECURITY

The security of the Pentagon and need to safeguard design drawings, technical specifications and force protection data has always been a PENREN priority. With the increase of "Classified" and "For Official Use Only" information, in July 2002, PENREN established a team of security specialists to oversee the safeguarding and security of personnel, facilities and information critical to PENREN. The Security Team is accomplishing their mission by developing and implementing personnel, physical and information protection policies and procedures while integrating tenant security requirements and policies and procedures established by the Office of the Secretary of Defense.

Following the events of 9/11 PENREN recognized the need to update formal plans to respond effectively in the event of a local disaster. A local disaster is defined in this context as an occurrence preventing PENREN from carrying out their core mission for a minimum of 30 days. As was the case on 9/11, PENREN may also be activated in the event the Pentagon should be physically affected by a disaster. The PENREN Continuity of Operations (COOP) Plan addresses both circumstances and details a plan of action for evacuation, emergency communication procedures, redundant database and network connectivity and relocation to a prepared alternate site.



Proposed Pentagon Renovation Program Drawdown Schedule

PUBLIC INTEREST

From September 11, 2001 to September 11, 2002, PENREN conducted and coordinated more than 300 on-site interviews and media opportunities for local, national and international press outlets. During this time frame, PENREN guided approximately 260 tours of renovation activities for members of Congress, foreign dignitaries, professional associations, government organizations and national celebrities in support of USO activities. In addition, PENREN worked very closely with the Office of Family Policy to support requests from family members of 9/11 victims to visit the Phoenix Project site and stay informed and involved with the rebuilding process.

Pentagon personnel, the media and the public were kept informed about PENREN activities through an integrated communications campaign. The PENREN web site, http://renovation.pentagon.mil, served as the primary source for people outside the Pentagon to gain updated information about the recovery and renovation process. *The Renovator*, a bimonthly PENREN newsletter, kept Pentagon tenants informed about project progress and prepared them for upcoming renovation activities. PENREN personnel frequently served as guest speakers at local, national and international conventions for government organizations and professional associations. Topics generally centered on the success of the Phoenix Project and plans for the future with an emphasis on PENREN's acquisition strategy, sustainable design initiatives, force protection improvements and management approach.

Audiences for these presentations included the United Nations, Environmental Protection Agency, Academy of Sciences, Building Owners and Managers Association, General Services Administration, American Society of Civil Engineers, Department of the Interior, Construction Management Association of America, National Contract Management Association, National Defense Industrial Association, Society of American Military Engineers,

The Pentagon Renovation Program information kiosk. Pentagon Employees and visitors can get up-to-date project information and other items from the kiosk, such as the Renovator, *PENREN's newsletter (below)*

On Cost.
On Schedule
and Built for the
Next 50 Years.

The Renovator

A Pentagon Renovation Program Newsletter

Vol. 7, No. 4, Fall-Winter 2002

"HARD HAT PATRIOTS" RESTORE PENTAGON

9/11/01 - 9/11/02

State Department, Council for Excellence in Government and several colleges and universities.

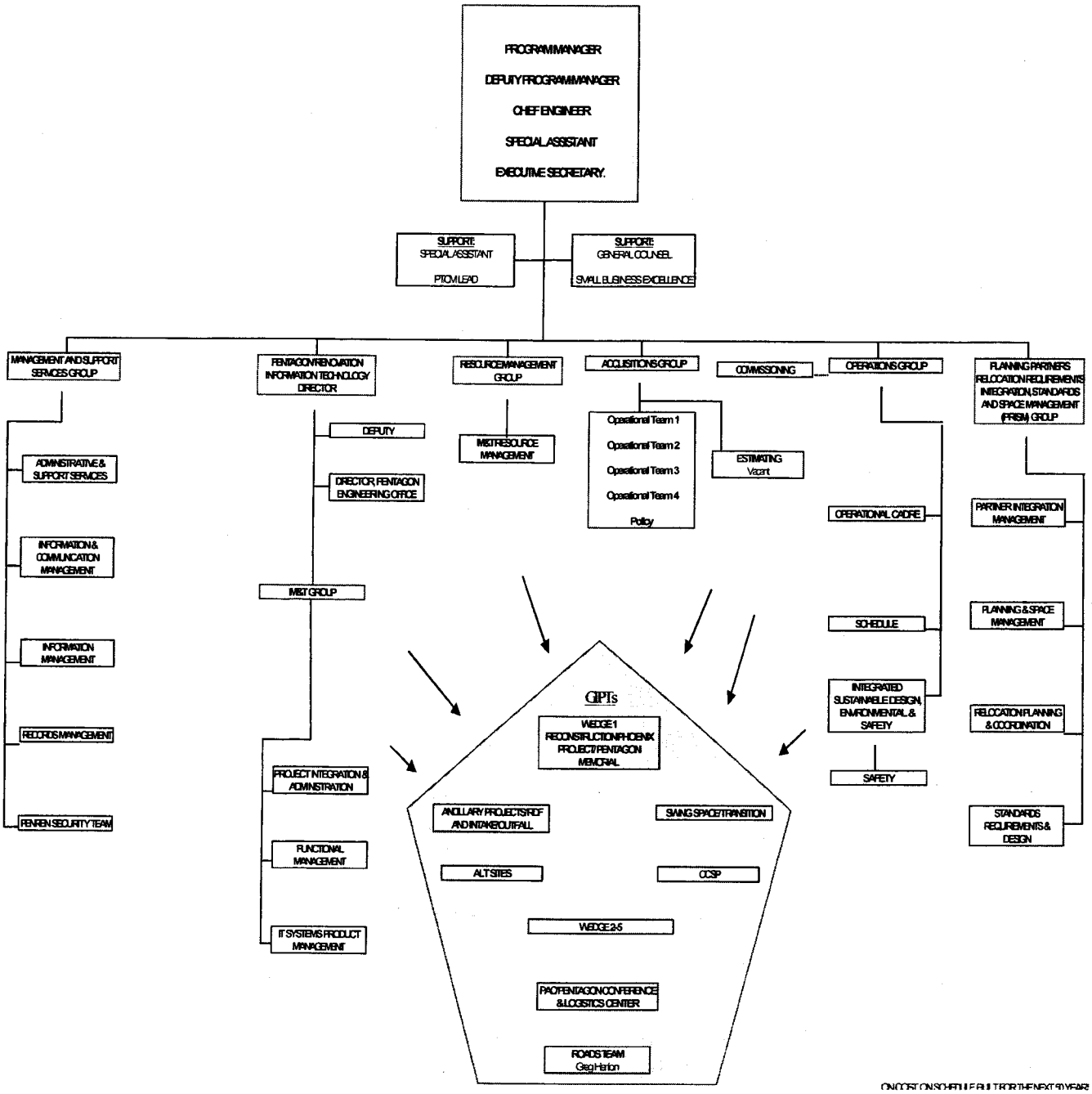
PENREN's press events included on-site press conferences, live press conferences from the Pentagon Press Room, and a foreign press conference conducted at the State Department. In addition, several press days were held when reporters, photographers, cameramen and producers were allowed access to the Phoenix Project site in small groups sessions. The walking tours of the project site included opportunity for B-roll footage, progress photos and interviews with project managers and construction personnel. PENREN also coordinated interviews with 9/11 heroes and survivors. Press activity was generated by milestone events involving senior DoD leadership.

Secretary Rumsfeld and Deputy Secretary of Defense Paul Wolfowitz spoke to construction workers during a topping-out ceremony to celebrate the completion of the structural concrete work in April and Deputy Secretary Wolfowitz placed a dedication capsule behind the final piece of the new limestone façade at a ceremony on June 11, 2002. The heavy attention from the media and public culminated on September 11, 2002 with two ceremonies on the Phoenix Project site. PENREN played an instrumental role in orchestrating the United in Freedom ceremony attended by President George W. Bush. During opening remarks, General Myers commended the efforts of the "Hard Hat Patriots" of PENREN for rebuilding the Pentagon. A second appreciation ceremony was held in the afternoon to recognize the Phoenix Project workers and their families for a year of dedication and sacrifice.

Secretary of Defense Donald Rumsfeld, signing autographs and talking with Phoenix Project workers at the "Topping Out" ceremony on April 5, 2002.

To accommodate the tremendous amount of press outlets interested in the Phoenix Project, the Information & Communications Management Team organized several media days on the project site.

PENTAGON RENOVATION PROGRAM TEAM STRUCTURE



IV. APPENDIX

Glossary of Terms

Work Completed Timeline

FY 2000 - National Defense Authorization Act
(Navy Annex)

FY 1991 - Legislative Authorization

FY 2000/01/02 - Department of Defense Appropriations Act

FY 2003 - Department of Defense Appropriation Act

Contact Information

GLOSSARY OF TERMS

As-builts
A graphic representaton that reflects actual post-construction/renovation conditions. As-built drawings are submitted to the property owner as part of the commissioning process.

Ancillary Projects
Projects outside the scope of work of the Pentagon Renovation Program. They are outside of the Congressional Cost Cap. This work is taken on by the Pentagon Renovation serving as a construction agent. costs for these projects are not funded by Renovation funds.

Backbone
The primary infrastructure for the transmission of data including major telecommunications components.

Back-to-Basics
Cost reduction initiatives implemented by the Pentagon Renovation Program after building conditions lead to increased schedule and cost, nearly exceeding the Congressional Cost Cap.

Best value
Best value source selection is typically based on past performance, management approach, technical approach, probable cost, and small and disadvantaged business support.

Core and Shell
Building common elements in an area, such as walls and public corridors and rebuilding the primary utility systems.

Design-bid-build
The standard procedure for construction contracts. Separate contracts are awarded to a design company and a construction company. Little or no partnering takes place, which often leads to conflict between parties.

Design-build
The approach adopted by PENREN to construction contracts that allows design and construction to operate as a single entity under one contract, thus allowing us to better meet the requirements of the intended tenant.

Enhanced Universal Space Plan

Fiscal Year (FY)
Time period between October 1 through September 31; used rather than Calendar Year for budget purposes.

Fit-out
Building and designing of interior office space for the intended tenant.

Lessons learned
A process whereby PENREN identifies methods and areas of improvement in order to minimize making repeated mistakes.

Punch list
A list of outstanding construction deficiencies, usually minor, which require correction before the job will be considered complete.

Short Interval Production Schedule (SIPS)
Wedges 2-5 process for renovation, involving individual trades working in 10,000 square-foot increments.

Smart Wall
Permanent, expandable wall that houses all data, communications and electrical lines for office spaces in Wedge 2.

Spine-Wall (Wedge 1)
The demountable wall found in systems furniture that carries electrical and telecommunications wiring.

Swing space
Temporary tenant space built-out in areas in and around the Pentagon. Occupied while the existing space is being renovated.

Systems Furniture
Demountable partitioned office furniture that provides greater flexibility than standard office furniture.

Universal Space Plan
A generic office construction with a very robust infrastructure, capable of meeting the requirements of any Pentagon tenant who may one day occupy that space.

WORK COMPLETED TIMELINE

1996

November	North Parking Pedestrian Ramp (1)

1997

January	River Terrace Handicapped Access (2)
February	Sewage Lift Station (3)
June	Center Courtyard Utility Tunnel (4)
August	Classified Waste Incinerator (5)
September	Heating and Refrigeration Plant (6)
October	River Terrace Vehicle Bridge (7)

1998

May	Corridor 8 Entrance Renovation (8)
August	River Terrace Renovation (9)

1999

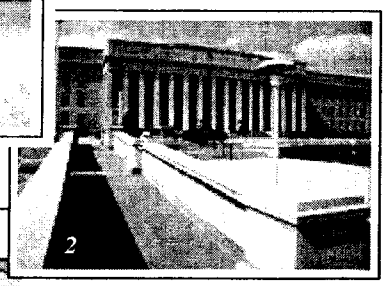
June	Renovation and Furnishing of Swing Space Facilities (10)
September	Mug Handle Infill (11)
October	Basement Segment 2A2 (12)

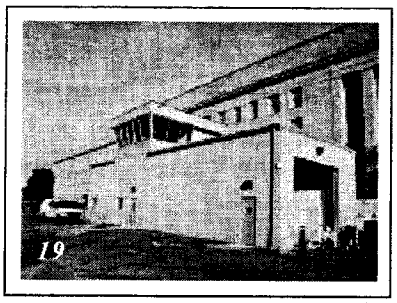
2000

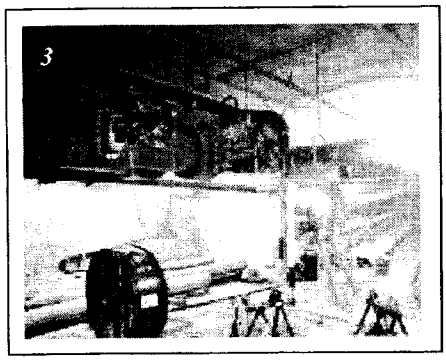
March	Basement/Mezzanine Segment 1 (13)
March	DiLorenzo TRICARE Health Clinic (14)
August	Remote Delivery Facility Phase 1 (15)
September	Replacement of Underground Water Lines (16)
October	Basement 3A Demolition and Abatement (17)
December	Remote Delivery Facility Phase 2 (18)

2001

January	Heliport and Fire Station Control Tower (19)
February	South Terrace Pedestrian Bridges (20)
September	Wedge 1 (21)
December	Pentagon Transit Center (22)



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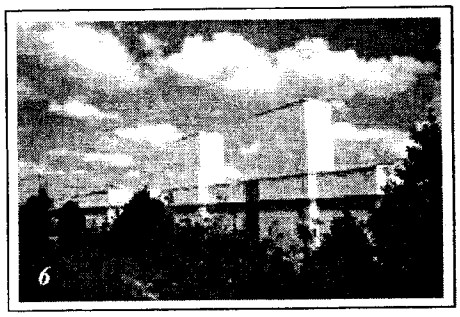
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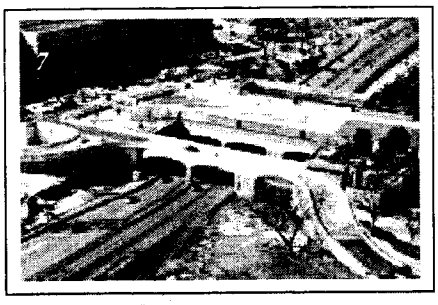
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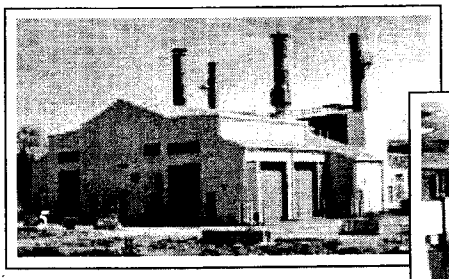
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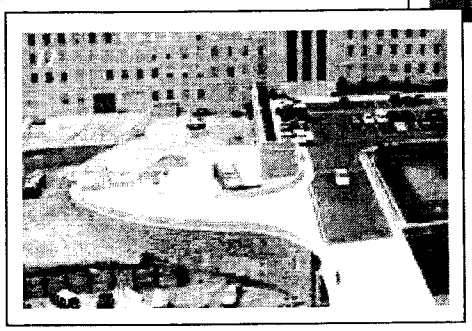

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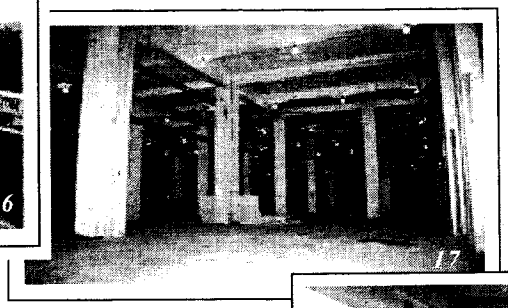
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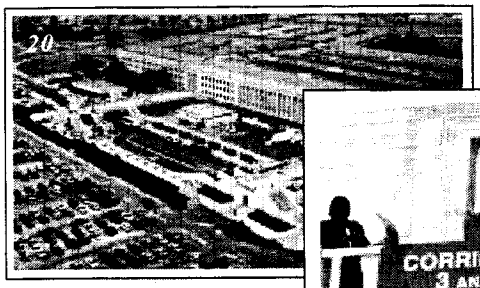
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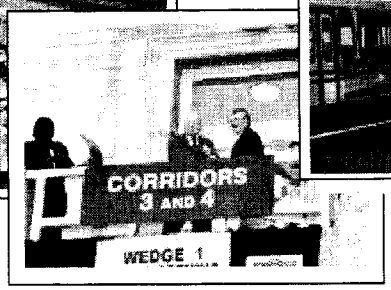
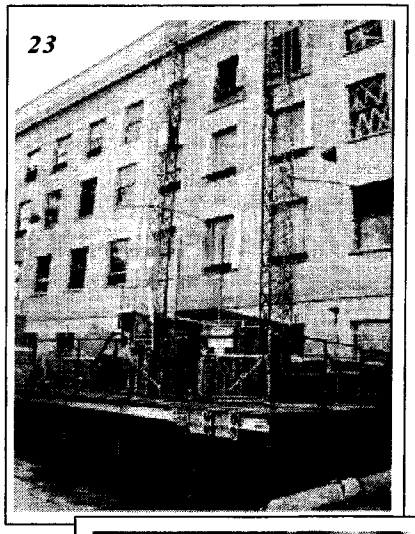

CORRIDORS
3 AND 4
WEDGE 1

2002

January	Limestone Cleaning & Repointing (23)
April	Relocation of NIMA Offices (24)
September	Phoenix/Wedge 1 Recovery (25)
September	RDF Power Plant (26)
November	Metro Entrance Facility (27)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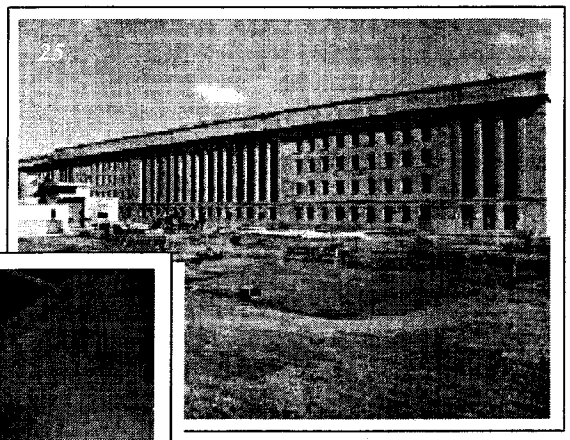
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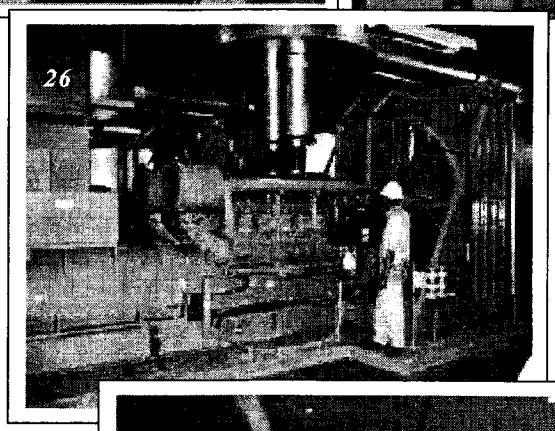
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FY 2000 - NATIONAL DEFENSE AUTHORIZATION ACT - *as amended by Sec 2851 of P.L. 107-314 National Defense Authorization Act for FY 2003*

Subtitle F—Expansion of Arlington National Cemetery

SEC. 2881. TRANSFER FROM NAVY ANNEX, ARLINGTON, VIRGINIA.

(a) LAND TRANSFER REQUIRED- The Secretary of Defense shall provide for the transfer to the Secretary of the Army of administrative jurisdiction over three parcels of real property consisting of approximately 36 acres and known as the Navy Annex (in this section referred to as the 'Navy Annex property').

(b) USE OF LAND- (1) Subject to paragraph (2), the Secretary of the Army shall incorporate the Navy Annex property transferred under subsection (a) into Arlington National Cemetery.

(2) The Secretary of Defense shall reserve not more than 4 acres of the Navy Annex property (of which not more than six acres may be north of the existing Columbia Pike) as a site for—

Such other memorials that the Secretary of Defense considers compatible with Arlington National Cemetery and the Air Force Memorial.

(c) REDEMPTION OF LAND FOR CEMETERY USE- Immediately after the transfer of administrative jurisdiction over the Navy Annex property, the Secretary of Defense shall provide for the removal of any improvements on that property and shall prepare the property for use as a part of Arlington National Cemetery.

(d) ESTABLISHMENT OF MASTER PLAN- (1) The Secretary of Defense shall establish a master plan for the use of the Navy Annex property transferred under subsection (a).

(2) The master plan shall take into account (A) the report submitted by the Secretary of the Army on the expansion of Arlington National Cemetery required at page 787 of the Joint Explanatory Statement of the Committee of Conference to accompany the bill H.R. 3616 of the One Hundred Fifth Congress (House Report 105-436 of the 105th Congress), and (B) the use of the acres reserved under subsection (b)(2) for a mermorial or museum.

(3) The master plan shall be established in consultation with the National Capital Planning Commission and only after coordination with appropriate officials of the Commonwealth of Virginia and of the County of Arlington, Virginia, with respect to matters pertaining to real property under the jurisdiction of those officials located in or adjacent to the Navy Annex property, including assessments of the effects on transportation, infrastructure, and utilities in that county by reason of the proposed uses of the Navy Annex property under subsection (b).

(4) Not later than 180 days after the date of the Bob Stump National Defense Authorization Act for FY 2003, the Secretary of Defense shall submit to Congress the master plan established under this subsection.

(e) IMPLEMENTATION OF MASTER PLAN- The Secretary of Defense may implement the provisions of the master plan at any time after the Secretary submits the master plan to Congress.

(f) LEGAL DESCRIPTION- In conjunction with the development of the master plan required by subsection (d), the Secretary of Defense shall determine the exact acreage and legal description of the portion of the Navy Annex property reserved under subsection (b)(2) and of the portion transferred under subsection (a) for incorporation into Arlington National Cemetery.

(g) REPORTS- (1) Not later than 90 days after the date of the enactment of this Act, the Secretary of the Army shall submit to the Secretary of Defense a copy of the report to Congress on the expansion of Arlington National Cemetery required at page 787 of the Joint Explanatory Statement of the Committee of Conference to accompany the bill H.R. 3616 of the One Hundred Fifth Congress (House Report 105-736 of the 105th Congress).

(2) The Secretary of Defense shall include a description of the use of the Navy Annex property transferred under subsection (a) in the annual report to Congress under section 2674(a)(2) of title 10, United States Code, on the state of the renovation of the Pentagon Reservation.

(h) DEADLINE- The Secretary of Defense shall complete the transfer of administrative jurisdiction required by subsection (a) not later than the earlier of—

(1) January 1, 2010; or

(2) the date when the Navy Annex property is no longer required (as determined by the Secretary) for use as temporary office space due to the renovation of the Pentagon.

Under the current schedule for the renovation of the Pentagon, it is anticipated the Navy Annex property and facility will be used as temporary and permanent office space until the conclusion of the renovation program. After that time, all the facility occupants will be relocated to either the Pentagon and/or other government controlled space.

(2) The Secretary of Defense shall include a description of the use of the Navy Annex property transferred under subsection (a) in the annual report to Congress under section 2674(a)(2) of title 10, United States Code, on the state of the renovation of the Pentagon Reservation.

Washington Headquarters Service (WHS), Real Estate & Facilities Division (RE&FD) Response to Section 2881

It is currently planned that, in accordance with Section 2881 of the FY 2000 Defense Appropriations Act, the Secretary of Defense will assign administrative jurisdiction of the Navy Annex property to the Secretary of the Army by January 1, 2010.

Further, in accordance with Section 2851 of the FY 2003 Defense Appropriations Act, by June 2003, the Secretary of Defense will establish a master plan for the use of the Navy Annex property that will take into account (A) the report submitted by the Secretary of the Army on the expansion of Arlington National Cemetery required at page 787 of the Joint Explanatory Statement of the Committee of Conference to accompany the bill H.R. 3616 of the One Hundred Fifth Congress, and (B) the use of Navy Annex property as a site for any other memorial or museum.

FY 2000/01/02 - DEPARTMENT OF DEFENSE APPROPRIATIONS ACT

The Department of Defense Appropriations Act, 2000, Public Law 106-79, Section 8064 (Oct. 25, 1999)

SEC. 8064. (a) None of the funds appropriated in this Act may be transferred to or obligated from the Pentagon Reservation Maintenance Revolving Fund, unless the Secretary of Defense certifies that the total cost for the planning, design, construction and installation of equipment for the renovation of the Pentagon Reservation will not exceed $1,222,000,000.

(b) The Secretary shall, in conjunction with the Pentagon Renovation, design and construct secure secretarial offices and support facilities and security-related changes to the subway entrance at the Pentagon Reservation.

The Department of Defense Appropriations Act, FY 2001, Public Law 106-259, Section 8061 (Aug. 9, 2000)

SEC. 8061. None of the funds appropriated in this Act may be transferred to or obligated from the Pentagon Reservation Maintenance Revolving Fund, unless the Secretary of Defense certifies that the total cost for the planning, design, construction and installation of equipment for the renovation of the Pentagon Reservation will not exceed $1,222,000,000.

The Department of Defense Appropriations Act, FY 2002, Public Law 107-117, Section 8060 (Jan. 10, 2002)

Sec. 8060. (a) Limitation on Pentagon Renovation Costs.—Not later than the date each year on which the President submits to Congress the budget under section 1105 of title 31, United States Code, the Secretary of Defense shall submit to Congress a certification that the total cost for the planning, design, construction, and installation of equipment for the renovation of wedges 2 through 5 of the Pentagon Reservation, cumulatively, will not exceed four times the total cost for the planning, design, construction, and installation of equipment for the renovation of wedge 1.

(b) Annual Adjustment.—For purposes of applying the limitation in subsection (a), the Secretary shall adjust the cost for the renovation of wedge 1 by any increase or decrease in costs attributable to economic inflation, based on the most recent economic assumptions issued by the Office of Management and Budget for use in preparation of the budget of the United States under section 1104 of title 31, United States Code.

(c) Exclusion of Certain Costs.—For purposes of calculating the limitation in subsection (a), the total cost for wedges 2 through 5 shall not include— (1) any repair or reconstruction cost incurred as a result of the terrorist attack on the Pentagon that occurred on September 11, 2001; (2) any increase in costs for wedges 2 through 5 attributable to compliance with new requirements of Federal, State, or local laws; and (3) any increase in costs attributable to additional security requirements that the Secretary of Defense considers essential to provide a safe and secure working environment.

(d) Certification Cost Reports.—As part of the annual certification under subsection (a), the Secretary shall report the projected cost (as of the time of the certification) for— (1) the renovation of each wedge, including the amount adjusted or otherwise excluded for such wedge under the authority of paragraphs (2) and (3) of subsection (c) for the period covered by the certification; and (2) the repair and reconstruction of wedges 1 and 2 in response to the terrorist attack on the Pentagon that occurred on September 11, 2001.

(e) Duration of Certification Requirement.—The requirement to make an annual certification under subsection (a) shall apply until the Secretary certifies to Congress that the renovation of the Pentagon Reservation is completed.

FY 2003- DEPARTMENT OF DEFENSE APPROPRIATIONS ACT

The Department of Defense Appropriations Act, FY 2003, Public Law 107-248, Section 8056 (October 10, 2002)

Sec. 8056. (a) Limitation on Pentagon Renovation Costs.—Not later than the date each year on which the President submits to Congress the budget under section 1105 of title 31, United States Code, the Secretary of Defense shall submit to Congress a certification that the total cost for the planning, design, construction, and installation of equipment for the renovation of wedges 2 through 5 of the Pentagon Reservation, cumulatively, will not exceed four times the total cost for the planning, design, construction, and installation of equipment for the renovation of wedge 1.

(b) Annual Adjustment.—For purposes of applying the limitation in subsection (a), the Secretary shall adjust the cost for the renovation of wedge 1 by any increase or decrease in costs attributable to economic inflation, based on the most recent economic assumptions issued by the Office of Management and Budget for use in preparation of the budget of the United States under section 1104 of title 31, United States Code.

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(e) Duration of Certification Requirement.—The requirement to make an annual certification under subsection (a) shall apply until the Secretary certifies to Congress that the renovation of the Pentagon Reservation is completed.

COPIES OF THE 2002 REPORT TO CONGRESS SENT TO:

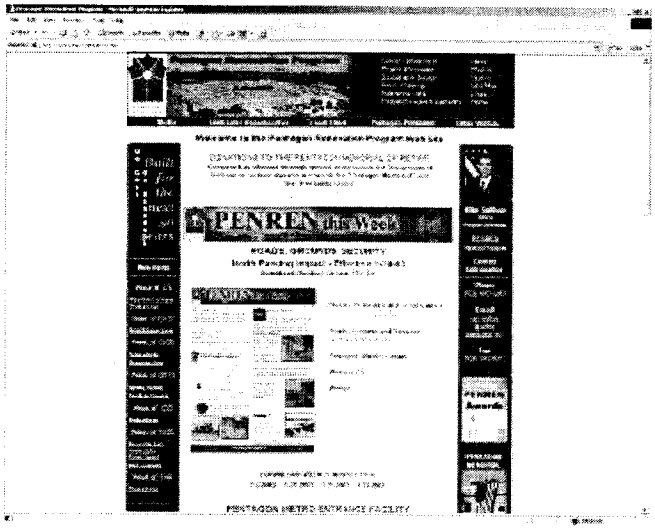
United States Senate
Honorable Richard B. Cheney, President of the Senate
Honorable John Warner, Chairman, Committee on Armed Services
Honorable Carl Levin, Ranking Minority Member, Committee on Armed Services
Honorable James M Inhofe, Chairman, Committee on Environment and Public Works
Honorable James Jeffords, Ranking Minority Member, Committee on Environment and Public Works
Honorable Ted Stevens, Chairman, Committee on Appropriations and Subcommitte on Defense, Committee on Appropriations
Honorable Robert Byrd, Ranking Minority Member, Committee on Appropriations

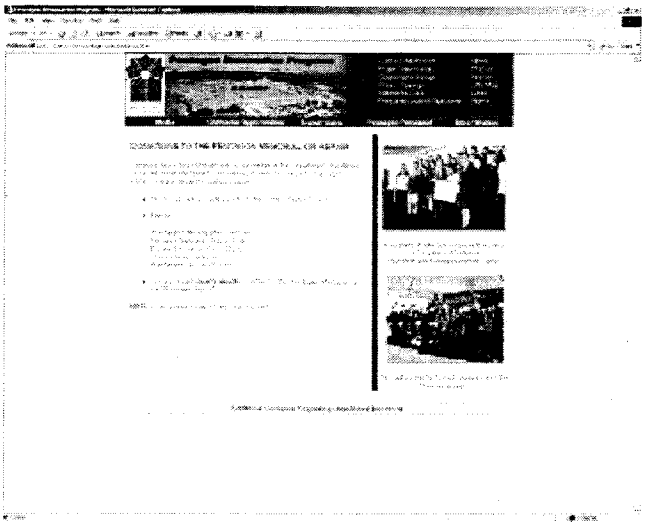
United States House of Representatives
Honorable J. Dennis Hastert, Speaker
Honorable Duncan Hunter, Chairman, Committee on Armed Services
Honorable Ike Skelton, Ranking Minority Member, Committee on Armed Services
Honorable Don Young, Chairman, Committee on Transportation and Infrastructure
Honorable James L. Oberstar, Ranking Minority Member, Committee on Transportation and Infrastructure
Honorable C.W. (Bill) Young, Chairman, Committee on Appropriations
Honorable, David R. Obey, Ranking Minority Member, Committee on Appropriations

CONTACT INFORMATION

The Pentagon Renovation Program frequently provides tours of renovation activities for Pentagon personnel and government officials

The Pentagon Renovation Program web site is the single best resource for additional information regarding renovation activities. The site is updated on a regular basis and includes in-depth historical information about the original construction of the Pentagon and the early day of the Renovation Program. Please feel free to call the Information and Communications Office at (703) 693-8933 or our helpline at (703) 693-4357 (HELP) for additional assistance.





The Program's web site is a source of information for news, project updates, contractor opportunities and other Pentagon Renovation Program Activities

http://renovation.pentagon.mil.