



Aerial view of the Pentagon from May 2001. In the foreground, Wedge 1 (between the white lines) encompasses approximately 1,000,000 square feet of building space in the area serviced by Corridors 3 and 4. All of the 5,000 employees who worked in the wedge had been relocated to leased office space or elsewhere in the Pentagon so that renovation could begin. Demolition and abatement activities have been completed and most of the interior space has been completed, including all new utilities, new elevators and escalators, and entirely new office space featuring modern systems furniture and temperature controls. In February 2001, personnel began moving back into renovated areas in the wedge.



The PENTAGON RENOVATION PROGRAM

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

THE NEED

The Pentagon, designated a National Historic Landmark in 1992, has never undergone a major renovation, and after more than 57 years, renovation is essential in order to meet current health, fire and life safety codes and provide reliable electrical, air conditioning and ventilating services. Absent a major renovation, the building infrastructure will become increasingly unreliable and soon unable to effectively support the headquarters and nerve center of the national military establishment. Major building 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, 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 the building to the DoD.



The Pentagon was constructed in just 16 months, from September 1941 to January 1943, as 15,000 workers labored in three shifts around the clock due to the pressures of wartime. The structure is almost entirely reinforced concrete as steel was preserved for the war effort. The Pentagon has never undergone a major renovation and after 58 years, all its building systems are beyond repair and need complete replacement. Hazardous materials are also prevalent throughout the 29-acre structure and it is minimally accessible for persons with disabilities.

THE TRANSFER

Based on consultation within the Administration and with Congressional Committees, legislation was prepared to transfer 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. This Act allows the Secretary of Defense to establish rent

rates for the tenants to 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 support systems (mechanical, electrical, plumbing) down to the base structure and then construction of all new systems. This full-scale removal is dictated by the wide-spread presence of asbestos throughout the building. Removal of plumbing systems is based on the high probability of catastrophic failure.



The River Terrace under construction in 1942. Rather than backfilling the entire site, two levels were created below ground to keep the project on schedule.



The River Terrace as it appeared in April 1999. Declared a historical landmark in 1992, the Pentagon has had few changes to its exterior facades.

The Renovation Program provides all new mechanical, electrical and plumbing systems, sprinkler systems, vertical transportation, cable management systems, improvements in fire and life safety systems, and flexible ceiling, lighting and partition systems. The Renovation will also provide accessibility throughout for persons with disabilities. It will preserve historic elements, upgrade food service facilities, construct operation centers, install modern telecommunications support features, comply with energy conservation and environmental requirements, reorganize materials



Worker installs asbestos ductwork during the original construction effort.



45,000 cubic yards of material was excavated in the Pentagon's basement to allow for construction of a new lower slab, which cleared the way for an entirely new mezzanine level.

handling and provide safety improvements in vehicular and pedestrian traffic.

The renovation concept for the Pentagon includes, as a first phase, a new Heating and Refrigeration Plant, which has been constructed. In conjunction with construction of the H&RP, a Center Courtyard Utilities Tunnel was constructed. The tunnel houses piping and conduit which will distribute building utilities provided by the new plant.

The second phase of the Program is the renovation of the Basement and Mezzanine which started in September 1994.



The Pentagon Renovation Team works with the DoD disability manager to address issues of concern for persons with disabilities.

for renovation while continuing operations. In order to vacate each wedge prior to renovation, tenants will be moved either to nearby leased office space or to space identified within the Pentagon.



1,200 employees have moved to newly renovated space in the basement and mezzanine.

A ribbon-cutting ceremony in the Air Force Council Room with the Pentagon Renovation Program Manager and the Air Force Chief of Staff.



The Pentagon's new Heating & Refrigeration Plant provides steam and chilled water to the Pentagon and Navy Annex (8,000,000 sq. ft. of space) and can operate on fuel oil or natural gas.

STATUS

On December 26, 1996, Deputy Secretary John White directed that the renovation of Wedge 1 begin in January 1998, and that the wedge be vacated by December 1997.

On January 15, 1997, as required by Congress, the Pentagon's Director for Administration and Management certified that the design, construction and installation of (building) equipment would not exceed \$1,118,000,000. In 1999, that amount was augmented to \$1,220,000,000 to accommodate new security initiatives.

Wedge 1 will be completed and fully occupied in October 2001. The overall renovation is expected to be completed in 2014.

The third through seventh phases of the program are the five wedges of the building from the first floor to the fifth floor.

These areas have been determined to be the optimum divisions

Wedge 1

Right: On March 8, 2001, David Cooke (left), Pentagon Director of Administration and Management, and Lee Evey, Pentagon Renovation Program Manager, cut a ribbon to mark the opening of Wedge 1 to Pentagon personnel.



Above: In February 1998, Pentagon senior officials participated in a "Wall-Bashing" ceremony to mark the beginning of demolition inside Wedge 1.



Floor slabs were removed in this area of Wedge 1 revealing all of its five floors and clearing the way for a new escalator bank (inset) that improves vertical mobility. Renovation also includes installation of 40 new passenger elevators throughout the Pentagon.



More than 5,000 personnel were relocated from Wedge 1 to swing space in leased office buildings or elsewhere in the Pentagon.



The wedge is gutted down to its bare bones requiring the removal of 100 million pounds of debris and 27 million pounds of asbestos contaminated material.



New insulation and windows improve the Pentagon's thermal envelope and increase energy efficiency.



New systems furniture features "spinewall" technology that allows all electrical and communication lines to run within the furniture itself. This enhances the flexibility of the office space and facilitates rapid reconfiguration.



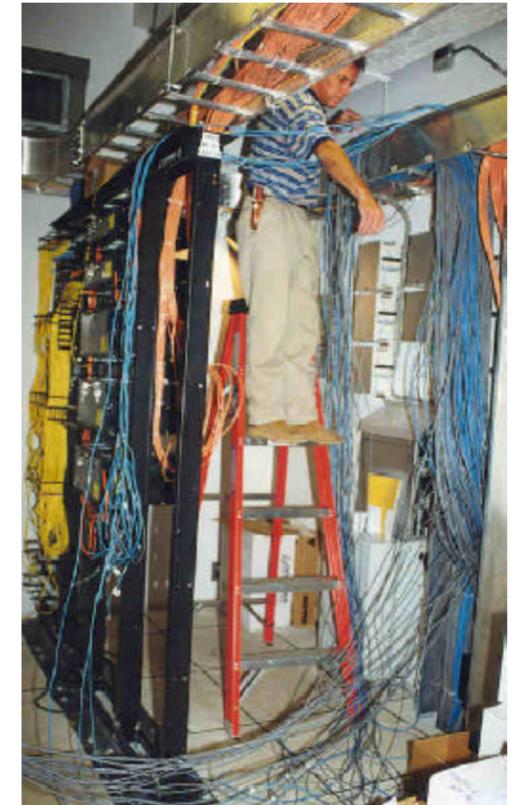
A Modern Health Facility

Above: The reception area to the Pentagon's new TRICARE clinic.

At right is a new training room for clinic personnel.

The 50,000-square-foot medical facility consolidates the Army, Navy, Air Force and Civilian clinics in the Pentagon. The state-of-the-art clinic features tele-medicine and computer connectivity with physicians throughout the U.S. Radiology features filmless technology. X-rays are digital providing physicians nearly instant feedback. In all, 21 areas of medicine including optometry, trauma care, physical therapy, podiatry, dermatology, cardiology, immunology, pharmacy and others are provided in the clinic. A new dental clinic includes 30 chairs, compared to the 12 that previously existed in the Pentagon.

Right: A new exam room.



Above: 75,000 miles of old wiring will be replaced with new lines and modern fiber optics, which eventually will carry voice, data and video across one line.



Above: Information Management & Telecommunications personnel inspect design drawings detailing locations of new communication lines below raised flooring.



Left: Pentagon personnel in the new Network Systems Management Center test equipment in the facility, which monitors and provides maintenance for the Pentagon's vast array of computer systems.

21st Century Telecommunications

The Pentagon is receiving a complete overhaul to its telecommunications system including the installation of fiber optics and the consolidation of computer server rooms and telephone switches.

A room inside the Pentagon's new Network Systems Management Center. Among several services, the facility helps to ensure the security of the Pentagon's 25,000 computers and hundreds of local area networks.





Aerial view of the Pentagon taken May 2001. Current renovation activities include Wedge 1 (foreground), new pedestrian bridges (foreground right), a new Remote Delivery Facility (top left) and construction of the new Pentagon Metro Entrance Facility (far right).

A Remote Delivery Facility

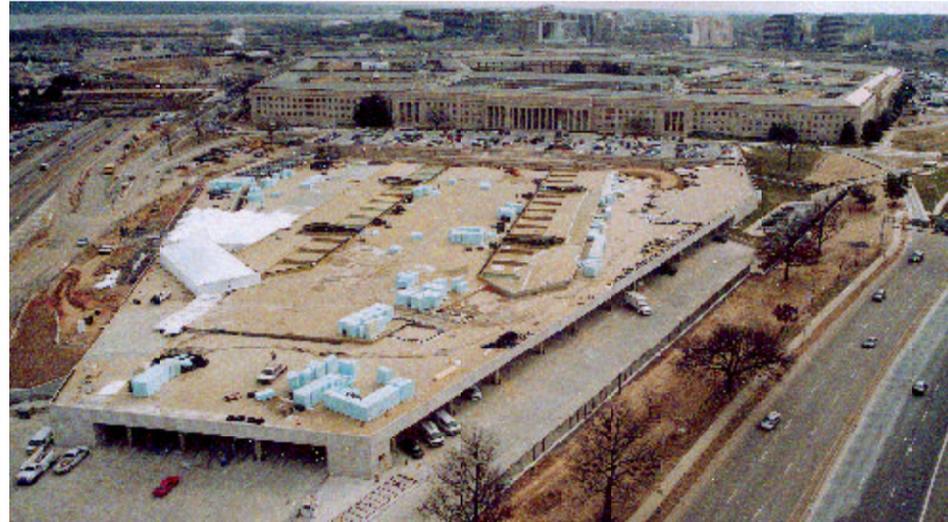


Artist's rendering of the Remote Delivery Facility after completion.



Above: The Pentagon's new Remote Delivery Facility provides a consolidated location for screening all materials and supplies that enter the Pentagon. Trucks and recycling vehicles use any of the 38 bays that line the west side of the facility and will no longer dock adjacent to the Pentagon along the South Terrace.

Right: Aerial view of construction activity at the site of the Remote Delivery Facility near the Pentagon's Mall Terrace. The loading dock along the west side (right) of the facility became fully operational on August 31, 2000, precisely on schedule. More than 250 vehicles make deliveries to the facility each day.



Right: Near the River Terrace, this new ramp for persons with disabilities marked the first time limestone was added to the Pentagon in 55 years.

Pedestrian Bridges

Below: Two new pedestrian bridges along the Pentagon's South Terrace provide safe access to the Pentagon from the South Parking Lot. Two elevators in each bridge provide accessibility for persons with disabilities.



Pentagon Metro Entrance Facility

Based on recent threat assessments, the Pentagon will eliminate the existing Metro escalator/elevator entry points into the building, and increase the distance between the building and vehicles. This security initiative will require the relocation of the existing Metro Bus Loop and the construction of a new entrance facility.

The Pentagon Renovation Office is working closely with Washington Metropolitan Area Transit Authority and disability representatives to ensure that the Metro Entrance Facility will be fully accessible for persons with disabilities.

The Pentagon Renovation Program will work to keep Metrorail and bus riders, as well as Pentagon tenants, informed throughout the design/build process. The contract was awarded in September 2000. Construction of the new bus facility is underway and will be completed in November 2001. Construction of a new Pentagon entrance addition will begin



A preliminary conceptual rendering of the new Metro Entrance Facility. The improved facility will provide several upgrades to the existing 1977 structure and will allow for future enhancements.

shortly thereafter. The phased construction process will ensure that service to Metrorail and buses, and access to the Pentagon will not be disrupted.



The existing bus loop at the Pentagon Metro allows vehicles to come within several feet of the building.



Lee Evey, (far left) Pentagon Renovation Program Manager, describes renovation activities to Congressman James Moran (Va.) during a recent site visit. A Congressional mandate requires an upgrade to the security of the Pentagon's Metro Entrance. To meet this requirement, the Metro bus facility (below) must be moved a minimum of 280-feet from the face of the Pentagon. Construction in the foreground marks the location of the new facility.

For more information about the Metro Entrance Facility, visit our web site at <http://metro.pentagon.mil>



Pentagon Renovation and the Media

The increased visibility of Pentagon renovation activities both inside and around the Pentagon resulted in significant and overwhelmingly positive media coverage during the past two years.

Renovation activities have been featured in a one-hour program on the Discovery Channel, a segment on CBS 60 Minutes II, CNN Science and Technology Week, ABC Morning News, Fox News, and in several local news broadcasts. In addition, a one-hour program about the Pentagon will aired on The History Channel in March 2001.



Barbara Starr with ABC News interviews Lee Evey, Pentagon Renovation Program Manager in June 1999.



CBS 60 Minutes II reporter, David Martin (center left) interviewed Pentagon Renovation Program Manager Lee Evey inside Wedge 1. A 12-minute segment about the renovation program aired in March 2000.

Most of the media attention has focused on the magnitude and complexity of renovating our nation's military headquarters. However, several trade publications, including the Engineering News Record, Energy & Environmental Management, and Building Operation Management, were particularly interested in the innovative procurement practices being employed by the program's contracting and acquisition teams, including the move to design-build contracts.



The Billion-Dollar Makeover

General Pentagon's Ongoing a 10-Year, \$1-billion Renovation

Japanese Announce

PENTAGON PUMPS UP PERFORMANCE



Pentagon renovation activities have caught the attention of local and national newspapers, magazines and trade journals, including the Washington Post, USA Today and the Engineering News Record. Reporters are increasingly interested not only in the renovation project itself, but also in the innovative ways it is being accomplished.

"Greening" Initiatives



Left: Aerial view of the Pentagon's new Heating & Refrigeration Plant (right). The plant is now 100 percent operational and the old facility has been demolished. More than \$1 million has been saved in terms of lower utility costs since the plant became operational in 1997.

To the left of the H&RP is the Pentagon's new Classified Waste Incinerator, which meets all EPA emissions standards.



Right: Inside the new Heating & Refrigeration Plant's boiler room. The boilers can operate on both fuel oil or natural gas and are significantly more efficient than the coal-fired boilers that existed in the old facility.



All of the Pentagon's 7,748 windows will be replaced with double-paned, double-glazed, thermal-insulated units that will significantly increase the energy efficiency of the building.



Ten chillers in the Pentagon's new Heating & Refrigeration Plant provide enough redundancy to ensure chilled water will continue to feed the building's air conditioning systems. Cooling is critical to the sustained operation of the Pentagon's myriad computer systems.



The Pentagon Renovation Office works closely with the Pentagon Building Management Office, the Pentagon Environmental Management Committee and the Department of Energy to explore alternate sources of energy like the solar panels seen here along the grounds of the new Heating & Refrigeration Plant.

Bird's-eye view of the Pentagon (November 1999)



The Pentagon, the nerve center of the U.S. military establishment, can easily be equated to a small city. The building covers 29 acres in addition to a 5-acre center courtyard, and encompasses 6.5 million square feet of building space, equivalent to three Empire State Buildings. The U.S. Capitol could fit into any of the Pentagon's five wedges and employees walk within a maze of 17 1/2 miles of rings and corridors to reach their offices. Surrounding parking lots accommodate nearly 9,000 vehicles and cover 67 acres. The Pentagon also has its own health facilities, post office, mini-mall, fire station, heliport and Metro station. It continues to be a symbol of our nation's strength and freedom both here and around the world.

The goals of the Renovation Program are to bring the Pentagon into compliance with all major building codes, the Americans with Disabilities Act, all fire and life safety codes, to preserve its historical integrity, and to ensure that the 23,000 employees that enter its doors each day have a modern, safe and flexible working environment for the next 50 years.



Pentagon Renovation Program

*On Cost, On Schedule,
Built for the Next 50 Years*

*For additional information about the
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or visit our web site at*

<http://renovation.pentagon.mil>

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