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of Engineers**

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1989 Design and Environmental Awards

Program celebrates project excellence

WASHINGTON, D.C. Twenty-nine Corps of Engineers projects from around the world were recently chosen from among 116 entries for honors in the Chief of Engineers 20th Design and Environmental Awards Program, held in early December.

The program recognizes excellence in design of recently completed Corps projects. All civil works and military construction projects completed within the last four years were eligible for competition in one of four categories: architecture, engineering, landscape architecture and environment. This year's competition

included everything from a child care center and hospital to waste treatment facilities.

Project entries were judged by impartial panels of design professionals from other federal agencies, private industry and academia. Each entry was judged on the basis of the basic fulfillment of its own criteria and the solution to its own particular problems.

Three levels of awards may be given in each category, Honor Award, Award of Merit and Honorable Mention. The top award winner from each category is then considered for the Chief of Engineers Award of Excellence.

The Chief of Engineers Award of Excellence is given to only one project, which must have earned an Honor Award or Award of Merit in one category and exhibit design excellence in more than one category. The winning project is determined by a panel composed of one member from each of the category juries.

The Honor Award may be given to one project in each category, at the judges' discretion, to recognize exceptional achievement.

The Award of Merit is given to projects that exhibit outstanding design or environmental achievement. Up to three of these can be

given in each category.

The Honorable Mention Award is given to projects that deserve recognition because of superior features or concepts, but do not qualify for a Merit or Honor Award.

The objective of the program is to encourage design and environmental professionals to develop projects that exhibit excellence in function, economy, resource conservation, aesthetics and creativity while being in harmony with the environment.

The Chief of Engineers Design and Environmental Awards Program supports the Federal Design Improvement Program.



Tundra swans dot the surface of Weaver Bottoms.

Weaver Bottoms earns highest award

The Weaver Bottoms Rehabilitation Project in Wabasha County, Minn., a joint effort between the Corps of Engineers and the U.S. Fish and Wildlife Service, earned a unanimous vote from the judges for the 1989 Chief of Engineers Award of Excellence.

It also earned the Honor Award for the Environmental Category.

Covering about 4,000 acres of the Upper Mississippi River National Wildlife and Fish Refuge, the area is an important part of the river's ecosystem. However, loss of vegetation from flooding and ice, increased turbidity from erosion and sedimentation greatly reduced the viability of Weaver Bottoms.

The Corps St. Paul District, as design agent, and the U.S. Fish and Wildlife Service in St.

Paul, as design firm, developed and evaluated five alternatives to rehabilitate the area. The plan they selected included construction of six barrier islands and the modification of 14 side channels entering Weaver Bottoms.

The material used to construct the project came from two nearby dredged material containment sites, clearing them for use again over the next 40 years.

The reduction of sedimentation preserves Weaver Bottoms as a valuable backwater area. The reduced flow from the side channel modifications and reduced wave-generated erosion and turbidity from the barrier islands benefits the aquatic plant community, and will eventually return Weaver Bottoms to a more productive marsh, water and island ecosystem.

From the Chief...

At no other time in world history has there been such recognition of the benefit of competition and free trade. The Berlin Wall has fallen. Warm winds of change are altering the current of the Cold War. And all because nations now know that nothing can replace the benefit they accrue when individuals are not only free but spurred on to do their best.

We believe we are the best public engineering agency in the world and are determined to make ourselves better to serve the nation's needs. One of the ways to make us better is to encourage more innovative projects through the spirit of competition.

I believe the Design and Environmental Awards Program provides a unique opportunity to showcase the Corps of Engineers commitment to design and environmental excellence and to recognize the professionals who make it happen. In this issue, you will find projects as unique as they are outstanding. The winners reflect environmental, engineering and architectural applications that exhibit excellence in function, economy, resource conservation, aesthetics, creativity and harmony with the environment.

This year, 12 nationally-known design and environmental professionals spent two days pouring over more than 100 entries. As one of the judges stated in reviewing the awards, It's exciting to see the size, variety and quality of what the Corps is doing.

As you turn these pages, please join me in celebrating the leaders in excellence—the winners of the 1989 Chief of Engineers Design and Environmental Awards.

Lt. Gen. H. J. Hatch

Environmental

Eight environmental projects were chosen from among 22 entries for recognition in the 20th Chief of Engineers Design and Environmental Awards Program.

Awards in this category included an Honor Award, two Awards of Merit and five Honorable Mentions. Additionally, Weaver Bottoms Enhancement Project, the Honor Award winner, also earned the Chief of Engineers Award of Excellence.

An environmental project is defined as a site area, project development or project program, which preserves ecological, aesthetic or cultural values; conserves or wisely uses natural resources; restores, maintains or enhances the natural or man-made environment; or creates opportunities for people to use and enjoy their environment.

An entry may also be research that has contributed to environmental quality or knowledge.

Factors considered by the judges to evaluate each entry included significance of the contribution, the unique or innovative aspects of the effort and the change resulting from the previous condition.

The members of the environmental jury were Dr. L. Eugene Cronin, a coastal consultant; Lee C. Harwig, Jr., chief of Federal Facilities Compliance for the Environmental Protection Agency; and Dr. Ralph O. Morganweck, assistant director of Fish and Wildlife Enhancement for the U.S. Fish and Wildlife Service.

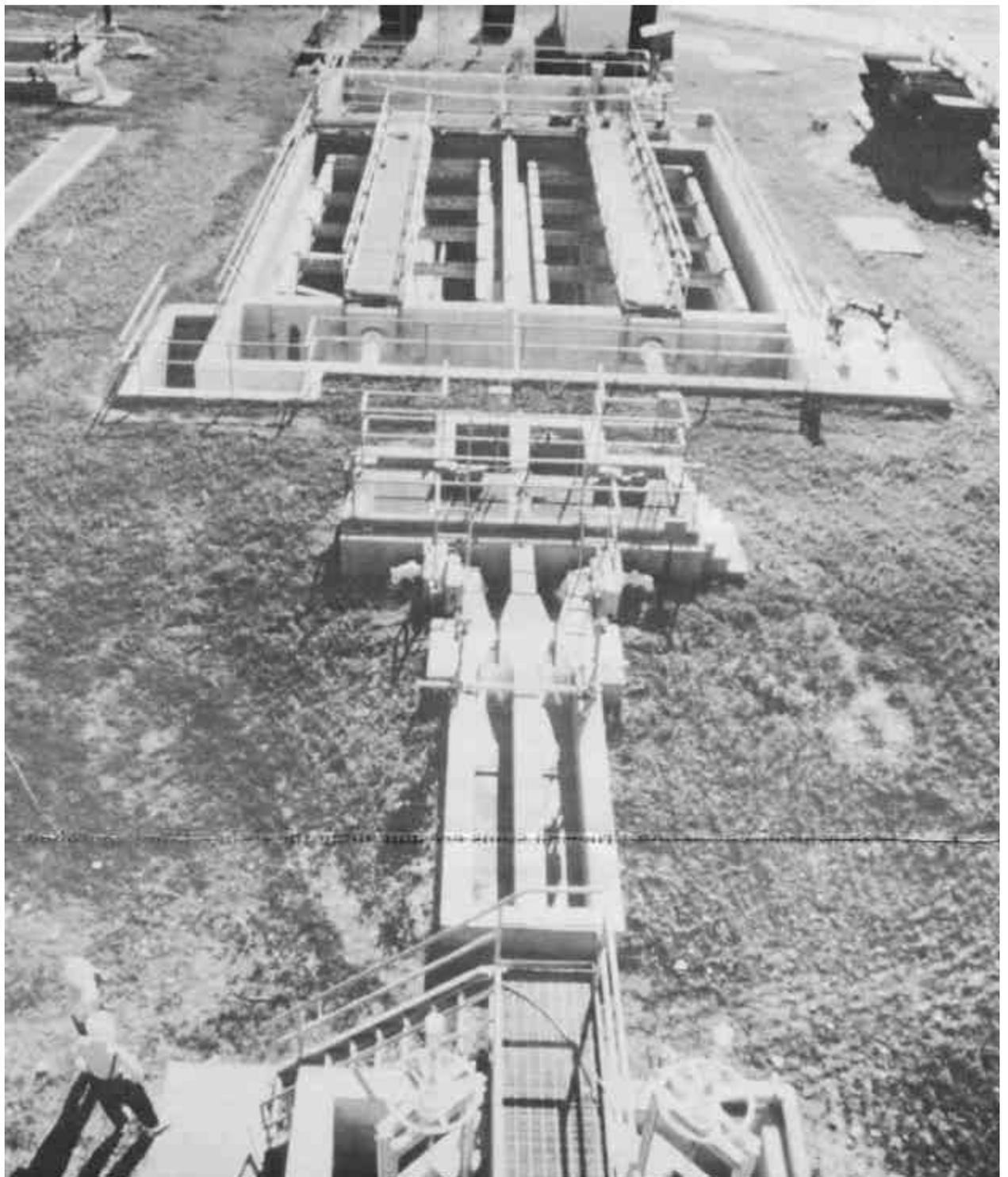
Award of Merit: Upgrade of Industrial waste Treatment Facility at Kelly Air Force Base, Texas. The design agent for the project was the Fort Worth District, and the design firm was Albert H. Halff Associates of Dallas, Texas.

The base generates a tremendous amount of wastes, and flows very drastically during an operating day, making consistent permit compliance difficult. Also, sludge produced by the plant is Class I hazardous material, which must be disposed of in suitable landfills at a cost of \$250 per ton.

The design solution provides a central industrial wastewater treatment plant for the bulk of the flow and separate pretreatment facilities for more concentrated runoff, while minimizing the amount of sludge produced at the new facilities to approximately one-fourth of the previous tonnage. The final design features a laboratory, three parallel treatment systems, five remote pretreatment facilities and more than 270 pumps.

The new facility is consistently in compliance with EPA drinking water regulations, and the effluent produced by the plant is considered a valuable water resource which Kelly Air Force Base plans to use for nondomestic purposes, reducing their withdrawals from the Edwards Aquifer by 50 percent.

Jurors' comments: *This is a state-of-the-art plant combining innovative biological and chemical treatment methods. The design provides maximum flexibility through the use of a unique computer network and an extensive*



The Kelly Air Force Base Industrial Waste Treatment Facility uses state-of-the-art methods to clean up hazardous materials.

monitoring system. While a great deal of attention is being paid by the public and the media these days to the cleanup of hazardous wastes generated in the past, it is essential that federal agencies ensure that their current practices are not creating problems for the future.

Award of Merit: Sand Stabilization-Vegetation Program, Buhne Point Shoreline Erosion Demonstration Project, Calif. The design agents for the project were the San Francisco and Los Angeles Districts.

Jetties constructed and maintained by the Corps of Engineers since the 1890s at the entrance to Humbolt Bay, the largest harbor

between San Francisco and the Columbia River, have focussed wave energy on Buhne Point. The point and its community of King Solomon, which includes commercial and sports fishing facilities and hundreds of homes, was threatened.

Using extensive physical modeling and phased construction, designers came up with a project whose central feature was the dredging of 600,000 cubic yards of material from the harbor to restore 23 acres of Buhne Point using native plants. To shelter and stabilize the sand on the north, the project called for a 1,050-foot shore-connected rubble mound breakwater, and a 1,250-foot groin built of H-piles and timbers

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The Sand Stabilization-Vegetation Program stops erosion along the Buhne Point shoreline.

was constructed to prevent sand transportation to the south.

The groins and breakwaters have halted water-borne sand migration from Buhne Point, and plantings of native plants have virtually eliminated wind erosion. The project also provided valuable information about using native plants for dune revegetation.

Jurors' comments: *This is an innovative approach with results that appear to be long lasting and beneficial to many. The environmental aspects were undertaken with excellent concepts and practice. The project provides a stimulating national model.*

Honorable Mention: Archaeological Site, Calleguas Creek Flood Control Channel, Ventura County, Calif. Los Angeles District was the design agent.

The Corps was faced with a difficult problem, a National Register of Historic Places site and Native American cemetery lay in line of maintenance dredging project essential for flood control.

To resolve conflicting interests, the Corps archaeological staff met with representatives of the State Historic Preservation Office, Advisory Council on Historic Preservation, Ventureño Chumash Indians and the Candelaria American Indian Council of Ventura County. After carefully considering the alternatives, including working around the site, it was determined the site had to be relocated.

The Corps ability to understand and resolve complex human and technical issues resulted in a program that produced an atmosphere of trust and cooperation among all involved without sacrificing much needed flood protection. The findings uncovered during the excavations captured the public's attention and renewed interest in the Chumash Indian culture.

Jurors' comments: *An excellent example of*

interagency cooperation at all levels of the community to provide flood control benefits while displaying exemplary sensitivity to Native Americans and their heritage. Agreement was reached with all involved parties on whether and how to relocate Native American burial sites and artifacts to a site safe from floods.

Honorable Mention: Curation Facility, Bonneville Lock and Dam Projects, Bonneville, Ore. Portland District was the design agent.

Portland District was faced with the problem of finding suitable long-term curation facilities, up to strict federal standards, for more than a million artifacts. To meet its needs, the district upgraded the basement of the Bonneville Lock and Dam auditorium building, built in 1934 and placed on the National register of Historic Places in 1987.

Renovation of almost 3,200 square feet of the basement and mechanical and electrical upgrades provided three secure rooms with state-of-the-art components for curation and collections management. This project also provides a new use for the auditorium, providing efficient use of an existing structure and ensuring its continued existence as a significant historic, cultural and architectural resource.

Jurors' comments: *The district came up with an effective solution by recognizing that an available facility could be converted, with professional advice and the availability of sufficient funds, to provide an excellent facility in an innovative and cost-effective manner. This is a notable blending of need and opportunity to achieve responsible care of cultural resources.*

Honorable mention: Project Huck Finn, Vicksburg, Miss. Vicksburg District was the design agent.

To ensure that future leaders would develop a heightened awareness of the Mississippi River and its value, the Vicksburg District and the

local school district co-sponsored development of a multi-level educational program for all public schools, beginning with young children and extending into college. Project Huck Finn includes a grammar school teachers workshop and unit for kindergarten through sixth grade and special emphasis programs to heighten awareness of river-related job opportunities for high school and college-bound students.

The program involves a partnership among the Corps, local schools, chambers of commerce, major industry and artisans. Through this effort, the Corps assumes a major education proponent role.

Jurors' comments: *An excellent education program. The jury wishes to recognize this program and encourages similar programs. This entry would have been more highly rated if the natural environment of the river had been emphasized in proportion to the transportation and commercial aspects.*

Honorable Mention: Mount Hebo Air Force Station Hazardous Waste Cleanup, Hebo, Ore. Omaha and Portland Districts were the projects design agents, and Radian Corporation of Austin, Texas, was the design firm.

Tactical Air Command used the station from 1956 to 1980, and salvage contracts to remove improvements following base closure left the area with polychlorinated biphenyls (PCB) liquids dumped on the ground, gutted and crushed transformers, and a mountain top strewn with construction debris, including asbestos. The clean up was complicated by the mountain top location and adverse weather conditions.

Project engineers had to send asbestos and PCB-contaminated soil and liquids to off-site facilities. However, they recycled metal, decontaminated transformers and buried structural foundations and construction debris in vaults greatly reducing transportation costs.

The clean-up effort returned the area to the public for recreational use and created habitat for what is now the largest Mount Hebo population of Oregon silver-spotted butterfly, an endangered species.

Jurors' comments: *Although itself a relatively small project, it is an early example of what promises to be a major area of activity for the Corps in years ahead.*

Honorable Mention: Dual Fuel Steam Plant, Red River Army Depot, Bowie County, Texas. The design agency was Fort Worth District. The design firms were Pope Engineers of New York, N.Y., and Weyher/Livsey Constructors of Atlanta.

Existing oil and gas boilers at the depot could not meet current needs, much less planned expansions, and a moratorium had been placed on new natural gas purchases by a local supplier. At the same time, due to environmental concerns, wooden pallets, paper and other combustibles had to be hauled to a landfill rather than being burned on site.

The solution was a new plant that could burn coal or combustible refuse. The plant includes a shredder to reduce wood to usable chips, an underground tunnel for loading and unloading coal to reduce dust emissions, and a curbed concrete-apronned lagoon to store the coal stockpile to keep it clean and prevent its rainfall runoff from contaminating surrounding streams. The latest technology is applied to control emissions, fuel systems, combustion and ash removal.

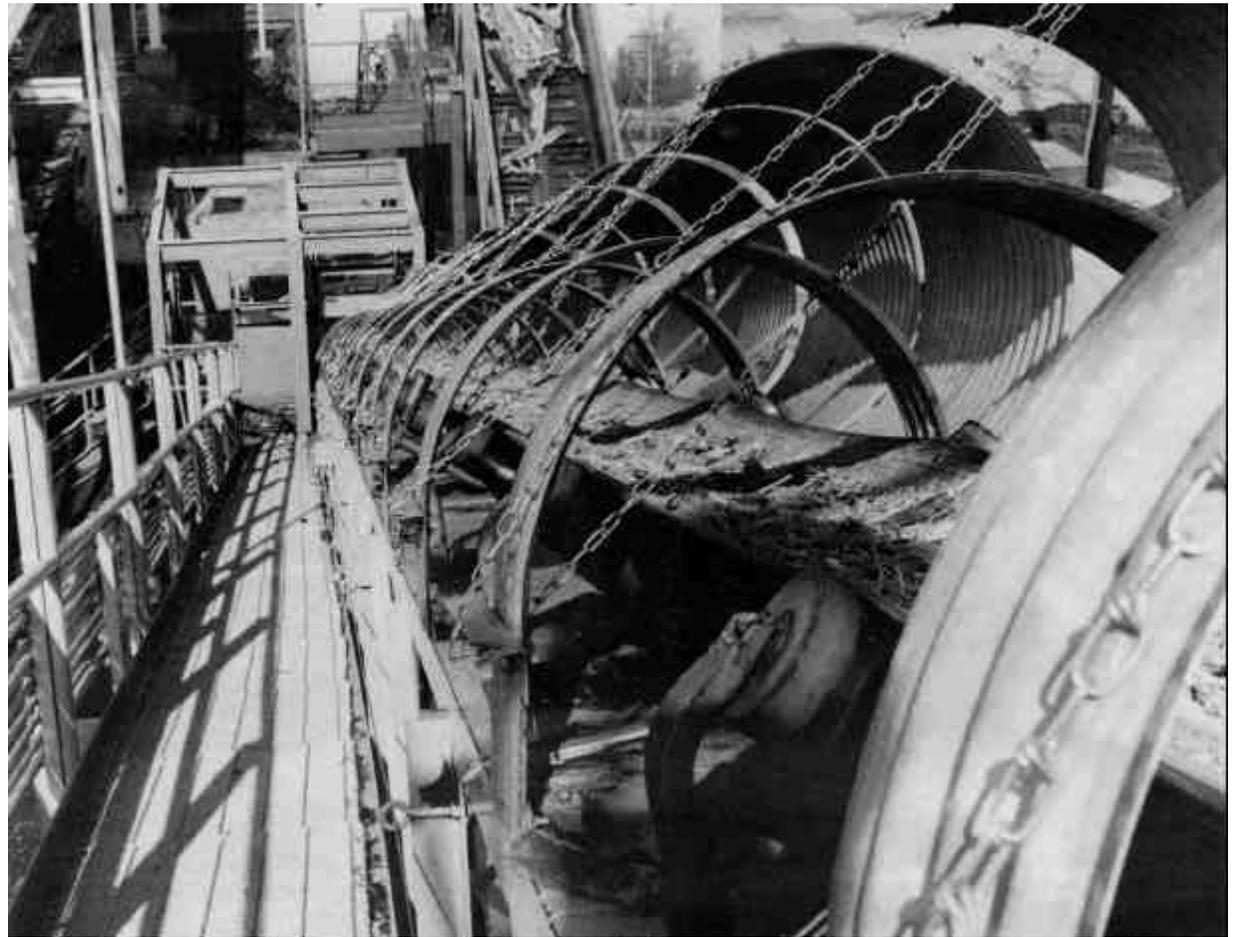
The new system drastically reduces landfill needs and saves more than \$1 million annually in fuel costs.

Jurors' comments: *This is an innovative approach to reducing the use of fuel oil and natural gas yet producing the extensive amounts of steam required at this facility. Steam can be produced at high efficiency at the same time the environment is enhanced through protection of the fuel storage and handling areas.*

Environmental Honorable Mentions



Project engineers plow the Mount Hebo Air Force Station to take away soil contaminants, making it safe for the public and create a habitat for the Oregon silver-spotted butterfly.



The Dual Fuel Steam Plant shreds wood for usable chips.



Corps personnel work with local community members at Calleguas Creek to relocate Native American burial sites and artifacts to an area safe from floods.



The modern Curation facility can safely store more than a million historical artifacts.



Through Project Huck Finn, a Vicksburg District employee explains Corps programs to local high school students.

Engineering



The Johnston Atoll Chemical Agent Disposal System facility is the free world's first full-scale production facility for disposing obsolete and deteriorating lethal chemical munitions.

Nine engineering projects earned recognition for the 1989 Design Awards Programs. The category had one Honor Award, three Awards of Merits and five Honorable Mentions.

An engineering project is defined as a structure or complex that is primarily engineering in character. Entries are judged on the basis of ingenuity and quality of engineering concepts, satisfactory solution to functional problems, economy of design and construction, customer satisfaction, attractive appearance, and harmony with the surrounding environment.

Members of the engineering jury were Dr. E. Walter LeFevre, president, National Society of Professional Engineers; James W. Poirot, president, American Consulting Engineers Council; and Albert A. Grant, principal engineer, Bellomo-McGee, Inc.

Honor Award: The Johnston Atoll Chemical Agent Disposal System, Johnston Atoll, southwest of Hawaii. The design firms were Ralph M. Parson Company and Stearns-Roger Division of United Engineers and Constructors. The design agent was Huntsville Division.

The Johnston Atoll Chemical Agent Disposal System (JACADS) facility is the free world's first full-scale production facility for disposal of obsolete and deteriorating lethal chemical munitions.

The process uses sophisticated robotic demilitarization equipment and material handling systems to remotely disassemble a variety of lethal chemical munitions.

After disassembly, all contaminated components are incinerated in unique, specially designed and proven furnace systems. The design encompasses numerous engineering disciplines—civil, chemical, mechanical, electrical, geotechnical and environmental—and applies architectural skill to provide an attractive, functional facility blending with the airport facilities on Johnston Atoll.

This unique structure required 10 years of research and development and is a prototype for eight additional facilities to be constructed in the U.S.

The nucleus of the JACADS process, the 73,000-square-foot munitions demilitarization

building, houses the sophisticated computer control system and the four specialized incinerator systems capable of processing 33,600 pounds of lethal chemical agent and generating nearly 250,000 pounds of decontaminated scrap metal per day.

Although the facility did not require an air permit, the Army dictated, because of environmental and public safety, that each furnace system be equipped with a state-of-the-art, highly efficient pollution abatement system.

Every feature of the JACADS facility is unique, rivaled only in complexity of present day nuclear facilities. The process has been recognized as the safest and most environmentally acceptable method for disposing of chemical weapons. This program has aroused interest from our NATO allies and the Soviet Union.

Jurors' comments: *The many complex systems required innovative solutions that are now recognized around the world and will be used for hazardous and toxic waste disposal not only in the U.S. but other nations. The project deserves broad recognition as an engineering achievement having worldwide significance and value.*

Award of Merit: Downstream Guidewall, Main Lock, Melvin Price Locks and Dam Project, Mississippi River, Alton, Ill. The design firm was Nashville District, and the design agent was St. Louis District.

During the preparation of the feature design memorandum, it became apparent that dry construction of the downstream guidewall to provide a concrete rubbing surface below the minimum expected tailwater would require a cofferdam. But an innovative design found another way.

The guidewall consisted of precast concrete beams spanning concrete-filled sheet pile cells. Contractors drove intermediate sheet pile cells, the H-piles within those cells under water. Tremie concrete reinforced the cells, which were then dewatered so the precast beam seats could be placed in a dry environment.

The elimination of the cofferdam through applied value engineering saved approximately \$8 million. The economic benefits of the Melvin Price Locks and Dam project, of which the

downstream guidewall is a key element, will outweigh the cost by 4-to-1 over the next 50 years.

Jurors' comments: *The construction process reduced dewatering requirements considerably but still provided a structurally and hydraulically stable guidewall. These design and construction procedures are examples of quality engineering.*

Award of Merit: Fisherman's Wharf Breakwater, San Francisco, Calif. The design firm was Los Angeles District, and the design agent was San Francisco District.

Although it's the city's number one tourist attraction, with 12 million visitors each year, the fact that the bay area population has greatly increased, and Americans have more than doubled their consumption of fish, fewer commercial fishing boats were being unloaded or berthed at the Fisherman's Wharf.

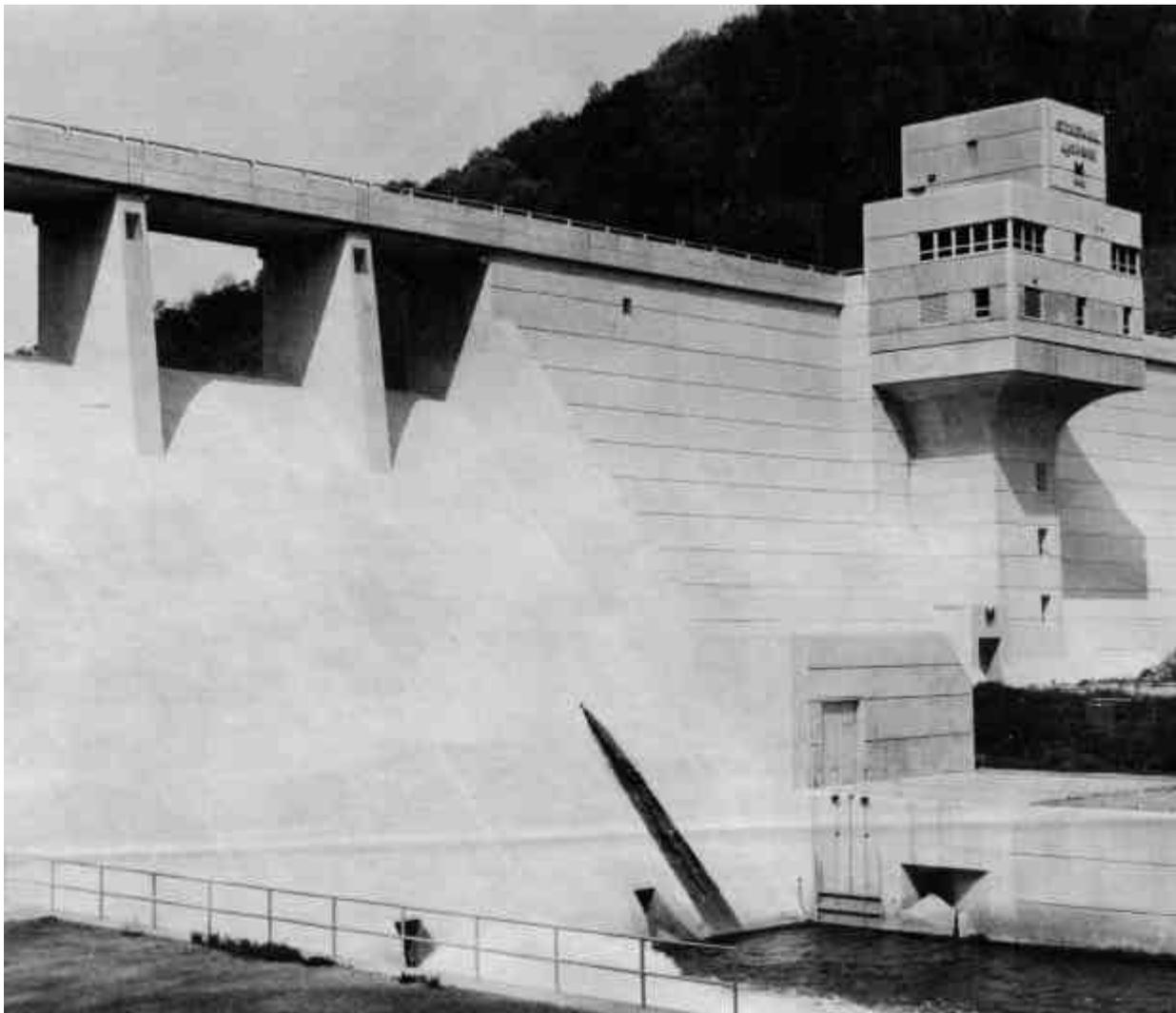
The Corps was asked to build a breakwater to protect the Fisherman's Wharf area from the San Francisco Bay wave action, and provide the basis for reestablishing the commercial fishing fleet.

Because of the high visibility and multiple use of the area, the breakwater design required unusually close coordination with many federal, state and local agencies—the Port of San Francisco, Golden Gate National Recreation Area, the National Park Service, the Fisherman's Wharf Association, and the Committee to Save Aquatic Park.

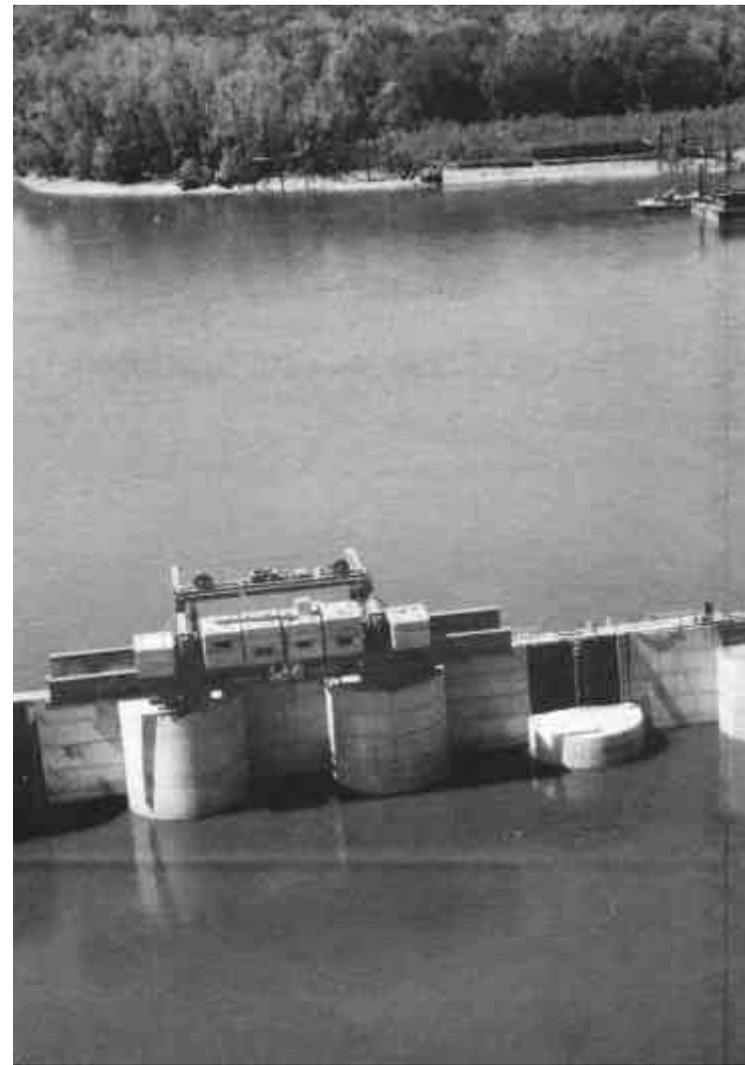
After considering 90 alternatives, the diverse and extensive modeling yielded a highly efficient system of three separate breakwaters, which minimized physical size and cost, yet provided protection from storms from several different directions.

Openings in two of the breakwaters help keep water quality high, particularly for swimmers. Handrails and a 40-foot ramp for handicapped access allows sightseeing and fishing from the east breakwater. Because the breakwater has done such a superb job of reducing waves and swells in the protected area, the Port of San Francisco has initiated construction of 88 new berths for commercial fishing vessels.

Jurors' comments: *Extensive physical and* (continued on page 6)



The design features of the selective withdrawal system to meet water quality requirements makes the Stonewall Jackson Dam unique.



The downstream guidewall, Main Lock, Melvin Price beams spanning concrete-filled sheet pile cells, an cofferdam.



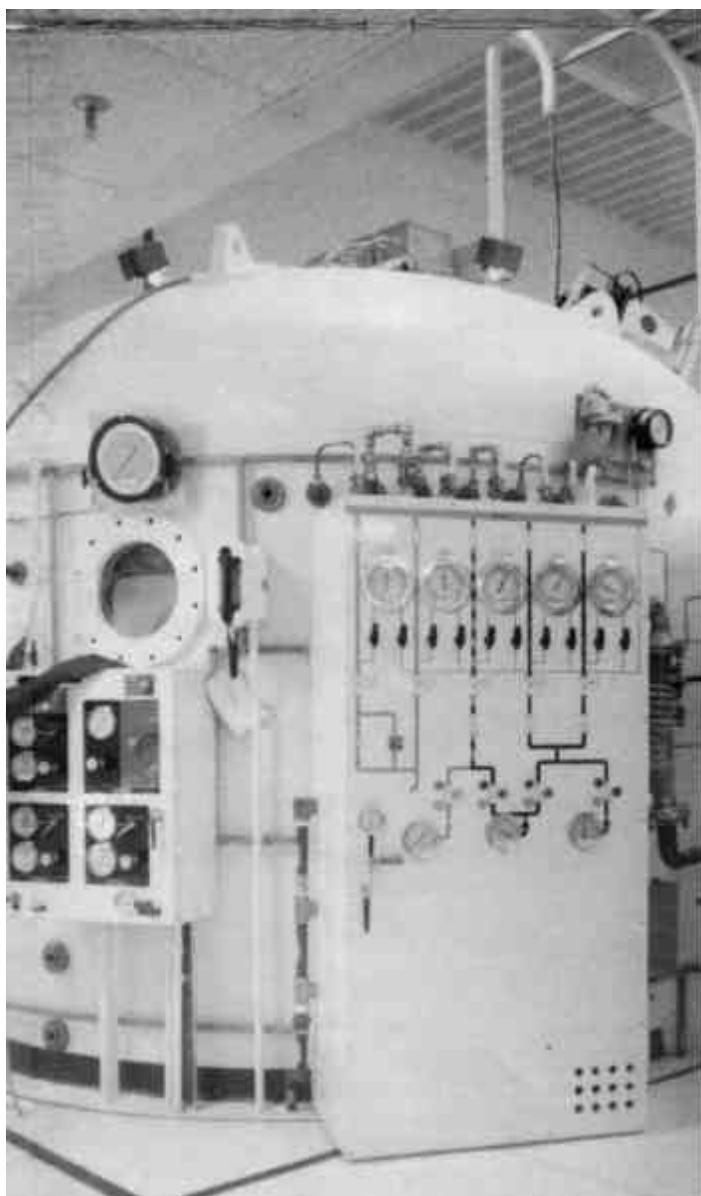
The newly built breakwater to protect San Francisco's Fisherman's Wharf helps to increase the commercial fishing fleet.



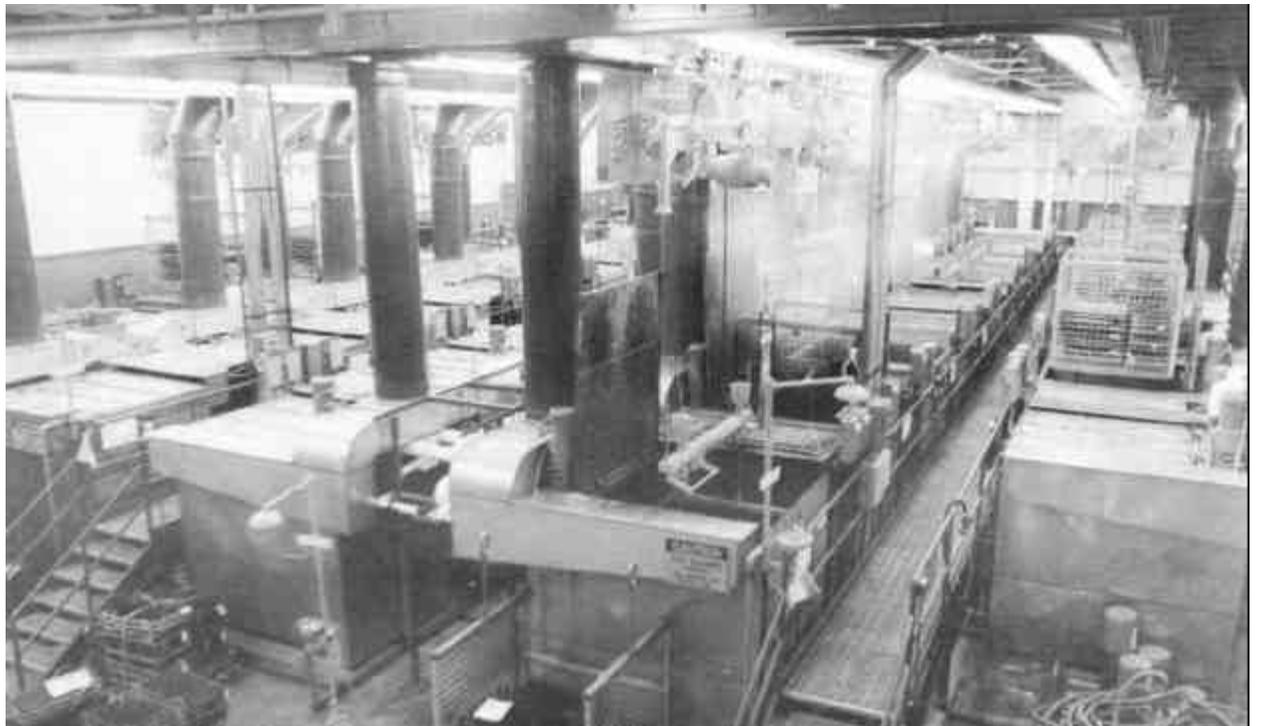
A technician prepares the treatments to patients.



Locks and Dam project uses precast concrete innovative design that eliminates the need for a



Clinical Hyperbaric Chamber facility for oxygen



Energy conservation, including special ventilation systems, plays a key role in the highly-automated Blade Repair Facility at Tinker Air Force Base.

(from page 5)

mathematical modeling produced a highly efficient design. The project was completed a month ahead of schedule at a cost savings of \$3.3 million, which was far more than the cost of the extensive modeling and engineering efforts to develop this unique solution. The highly visible nature of the project and the multiple publics served make this successful project worthy of special notice.

Award of Merit: Stonewall Jackson Lake Dam, on the West Fork River near Weston, Lewis County, West Virginia. The design firm and the design agent was the Pittsburgh District.

While the Stonewall Jackson Lake Dam by itself may not be unique, its selective withdrawal system to meet water quality requirements is.

The adopted design features two towers, one on each side of the spillway. Movable gate leaves allow withdrawal of water from any level between the spillway and minimum pool elevations. The position of the gates allows either weir flow over a gate leaf, or flow through a submerged opening between gates leaves. It is also possible to withdraw water simultaneously from more than one level into the same tower. This flexibility ensures that water release temperatures remain constant regardless of fluctuations in the lake.

To accommodate the potential development of commercial hydropower at the project, a monolith of the dam contains a sealed penstock to not only accommodate but encourage additional hydropower in the future. This type of selective withdrawal system is a first for the Corps.

Jurors' comments: *The structural design is aesthetically pleasing as well as functional. Flood control, future power generation capability, energy conservation, preservation of water quality and pleasing project appearance were all achieved within budget.*

Honorable Mention: Blade Repair Facility, Tinker Air Force Base, Okla. The design agent was Tulsa District, and SYSTECON of Duluth, Ga., was the design firm.

This building provides a centralized, highly automated facility for the repair and reconditioning of jet engine turbine blades.

Because repair processes for turbine blades constantly undergo upgrade due to advances in technology, the new design had to allow maximum flexibility for the relocation and addition of process equipment and material



Floodwalls protect the land, ecology and community of Tug Fork Valley.

handling components. Structural columns, which would otherwise interfere with usable floor space, run along the central aisle and perimeter of the building. Attention to occupant safety required attention to efficiency, pathways, hazard zones and acoustical isolation.

The final design provides automated distribution, storage, and retrieval of blades and vanes, and a material handling system capable of computerized tracking and routing of blade batches. What has emerged from this design is a unique structure that addresses the contradiction between the purely functional aspect of a largely industrial concern and the modern, high-tech office building aspect of a computerized material handling facility.

Jurors' comments: *Included in the design were numerous energy conservation concepts such as solar shading by insulated and reflective glazed windows, special ventilation systems to control toxic fumes and explosive gases and energy monitoring system. This multiple discipline facility is a significant contribution to the engineering profession.*

Honorable Mention: West Williamson Local Protection Project, Williamson, Mingo County, W.Va. The design firms were Huntington District and Nashville District. The design agent was Huntington District.

The project provides flood protection for a major population center located in the flood-prone Tug Fork Valley, while providing as much flood-free developing land behind the protection system as possible and eliminating or minimizing impact to ecological, social and aesthetic values.

(continued on page 8)

(from page 7)

To meet these challenges was an issue sensitive to all concerns. Floodwalls instead of levees meet unusually high protection levels. The floodwall openings provide quick-closing swing gates, requiring minimal manpower from the city. Relocation and straightening of part of the river reduce adverse flood-related effects and provide better alignment for the wall and more developing land behind it. Texturing and appropriate graphics such as trees, clouds and recreational activities soften the otherwise obstructive and monotonous character of the conventional floodwall.

Various other features—a fishing pier, a ramp for handicapped access, a combined bicycle path and walkway, pedestrian gate openings, plantings, in-stream rock revetments and boulders—enhance its aesthetic, environmental and social acceptability.

Jurors' comments: *Due to aggressive value engineering plus other favorable conditions, the project was completed within budget and 16 months ahead of schedule. The concern for community protection during construction along with the public acceptance of the completed project are notable examples of good engineering.*

Honorable Mention: Clinical Hyperbaric Facility, Wright-Patterson Air Force Base, Dayton, Ohio. The design firm was Sherlock, Smith & Adams of Montgomery, Ala. The design agent was Louisville District.

The design called for construction of the largest, most highly automated facility ever conceived for the large scale administration of hyperbaric oxygen to clinical patients. The use of this type of oxygen requires that patients breathe by mask or head tent at elevated environmental pressures, usually in the range of two to six atmospheres absolute.

The facility must handle up to 18 patients at one time in the main treatment chamber and up to five patients at one time in each of the two smaller ancillary chambers, all with a minimum possible crew size.

A three-tiered control system allows fully manual control of the pressure in each chamber from chamber-side control stations, semi-automatic control from main control console, and fully automatic control from the computer. Under normal circumstances, a crew of five can safely treat up to 18 patients at one time.

Based on this project's success, two more facilities of the same basic design are currently under construction.

Jurors' comments: *The design involved many complex and interrelated subsystems. Life safety, environmental controls, human occupancy by both patients and crew, medical treatment facilities, plus many others all contained within a complex of three interconnected pressure vessels required an integrated systems approach to design.*

Honorable Mention: Lenox Bridge, Lakewood Development, Dyer County, Tenn. The design firm was Eilers, Oakley, Chester and Rike, Inc., Memphis, Tenn., and the design agent was Memphis District.

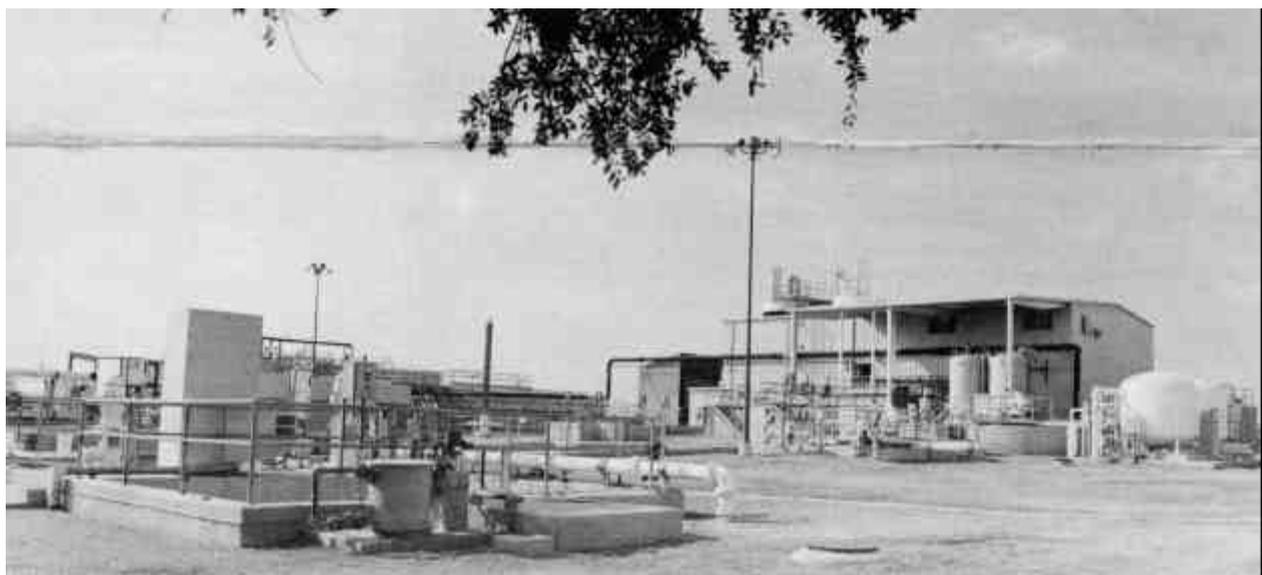
The Lenox Bridge was built in 1917 over the Obion River in the vicinity of Lenox, Tenn., and had been in service for 60 years.

A swing-span, pony-Pratt-through-truss design, the turntable swing had three continuous 50-foot spans over the central pier. When swung, the outer spans acted as simple cantilevers. The structure had a timber decking support by steel stringers, which rested on steel floor beams.

The challenge facing designers was to relocate and rehabilitate the bridge, which was halting a needed channel improvement, provide an aesthetically pleasing and publicly accessible orientation, and specify supporting structures



Built in 1917, the newly renovated Lenox bridge continues to meet the public's needs without sacrificing its historic design.



An innovative design solution helps the Industrial Waste Treatment facility reduce hazardous waste sludge.

and rehabilitation materials to meet modern standards without damaging the integrity of the original structural design.

Jurors' comments: *"Fifty percent of the original structure was rehabilitated and reused, then carefully relocated to provide for public viewing and appreciation of the nation's great civil engineering heritage. The care taken to maintain the structural and historic characteristics of the original design and setting make this project worthy of special recognition."*

Honorable Mention: Industrial Waste Treatment Facility Upgrade, Kelly Air Force Base, Texas. The design was Albert H. Halff Associates of Dallas, Texas. The design agent was Fort Worth District. (This project also earned an Award of Merit in the Environment category.)

Kelly Air Force Base is the largest aircraft maintenance facility in the world, handling more than 50 percent of the Air Force's engine inventory. It is the home of the world's largest electroplating shop and aircraft hangars.

The tremendous amount of industrial waste

generated by Kelly's electroplating shops, parts cleaning shops, painting operations and hundreds of support activities presents a unique wastewater situation that could only be solved by applying innovative design solutions.

The new design isolates the heavy metal wastes generated at the electroplating shops and the highly phenolic wastes from paint stripping activities. This is the first case where biological treatment of phenolic wastes has been used on this scale and magnitude.

The general approach to the project has provided Kelly Air Force Base with tremendous flexibility in not only their treatment of industrial waste-water but also their ability to efficiently handle waste streams previously excluded from the old plant.

Jurors' comments: *The innovative treatment processes have significantly improved the effluent as well as reduced the amount of hazardous waste sludge. With construction costs lower than authorized funding, lower operating costs, and well designed site layout, the plant now has record of being consistently in compliance.*

Architecture

Six projects were chosen from almost 60 entries as the best architecture design projects in the Corps 1989 Design and Environmental Awards Program. Entries ranged from a bowling alley in Germany to a child development center at Fort Carson, Colo.

Architectural projects are buildings or groups of buildings designed to provide a functional solution for the activities they house. Entries are judged on the basis of architectural concept, satisfactory solution to functional problems, appearance, and harmony with the surrounding environment.

Members of the Architectural jury were Ted P. Pappas, president of Pappas Associates Architects, Inc.; H. Kennard Bussard, president, RDG Bussard Dikis, Inc.; and Velpeau E. Hawes, Jr., president, Pierce Goodwin Alexander & Linville.

Honor Award: The Secure Operator Training Facility at Fort Devens, Mass. Design firm was Architectural Resources Cambridge, Inc., and the design agent was New England Division.

The basic criteria called for a building that should be simple but provide an environment that supports teaching and learning. systems and materials had to be as durable and energy efficient as possible to reduce operating and maintenance costs. The design also had to satisfy the agency's stringent security constraints.

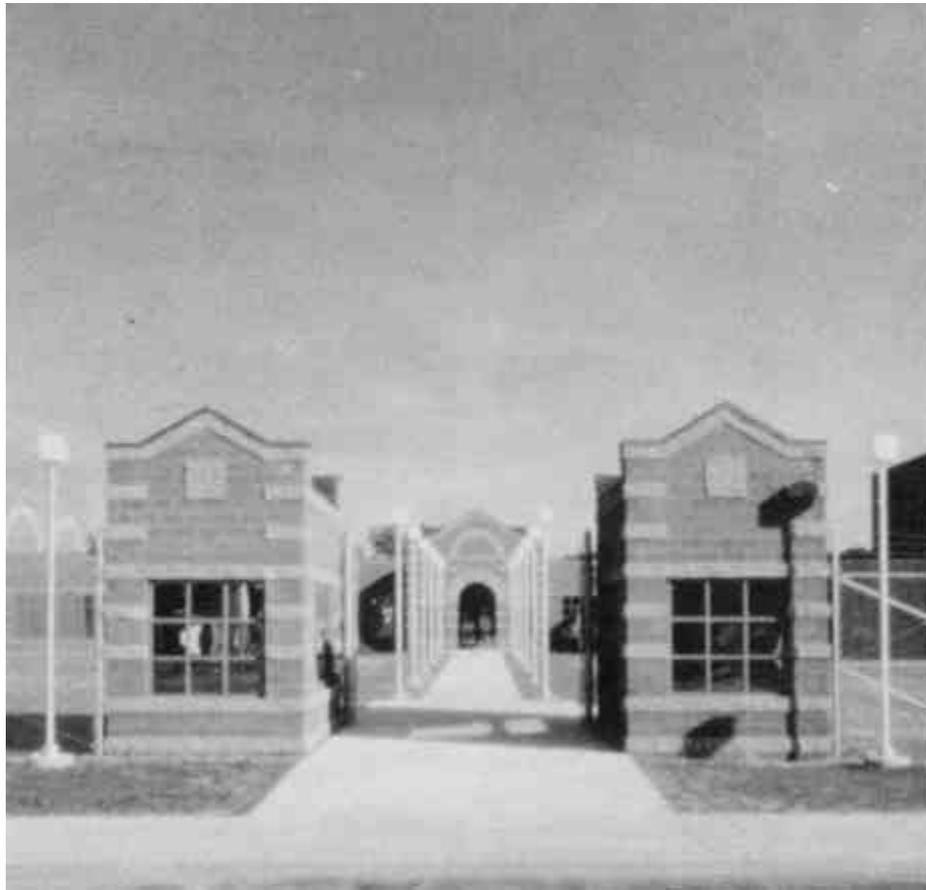
The designers created a two-story building with one level above ground and one below. The upper level has the building's main entrance, the high-bay vehicle areas, mechanical support systems, and programs not involving sensitive information. The lower level minimizes outside exposure and is the center for the Sensitive Compartmented Information Facility.

Although the majority of the building was designed with function in mind, the entry lobby, which gives access to both floors, imparts a sense of importance to occupants by creating an impressive entry to their workplace. The exterior design recalls traditional New England building vocabulary already present at the post.

Jurors' comments: *This person understood proportion. . . good site plan. . . strong concept. . . nicely detailed, symmetrical but not forced. It works.*

Award of Merit: The Composite Medical Facility, Minot Air Force Base, N.D. The design firm was Flad and Associates of Wisconsin, Inc. The design agent was Omaha District.

This 178,000-square-foot, three-story complex provides complete health care services for the base



The Secure Operator Training Facility at Fort Devens, Mass., gives occupants an atmosphere for teaching and learning.



The new three-story Composite Medical Facility provides health care for Minot Air Force Base personnel and their families.

community. The first floor contains all clinics such as pathology, radiology, and general emergency services for both proximity to each other and easy access to separate entrances for emergency cases, staff, patients and visitors. The facility's dental clinic, physical therapy, material management and food service are located on the second floor. The third floor holds primary inpatient functions of surgery, intensive and coronary care, obstetrics and inpatient beds.

Sited at the junction of the base's main entrance and public access highway, the hospital's image projects a major position of prominence, promotes a positive attitude towards health care for base personnel and their families

and enhances its ability to attract quality Air Force medical staff.

Jurors' comments: *Well organized and clear plan in a very complex building type. Zoning of the plan is extremely clear with circulation well defined. It's obvious the design firm knows medical facilities.*

Honorable Mention: Commissary at Fort Jackson, S.C. The design firm was Cromwell, Truemper, Levy, Thompson & Woodsmall, Inc. in joint venture with Anderson/Fulmer. The design agent was Savannah District.

The new 104,650-square-foot building provides a first-class commercial food storage and sales facility for hundreds of military families and a large retirement

community.

It's not like most traditional commissaries, which mimic giant food warehouses. Its north facing clerestories create a bright and cheerful interior. Areas of oak paneling and colorful banners depict the post's history and adds the warmth and color of a festival marketplace. The massive building is tucked into the hillside site with eight-foot berms along its west and north sides.

Jurors' comments: *The strong and commendable concept drew our attention. This difficult project type, on the scale of a warehouse facility, was scaled down with berms.*

Honorable Mention: The U.S. Army Intelligence and Security Command Headquarters at Fort Belvoir, Va. The design firm was the Kling-Lindquist Partnership, Inc., and the design agent was Baltimore District.

The new headquarters building is located on a 46-acre site previously used as an earth moving equipment parking area. The site included a relatively large cleared level area, a sloping wooded area and two ponds.

The building itself is nestled along the sloping wood area. Its geometry, with its continuously glazed exterior perimeter wall, provides maximum views of the wooded area.

A large skylight lets ample sunlight into the main lobby and elevatory lobby, which extends through all four floors, two above ground and two below. This allows sunlight to penetrate to all levels, including the two underground floors.

To adapt the building design to its surroundings, the open flat area was developed for parking, and separated from the surrounding area with trees to soften the visual impact. Earth mounding planted with trees is used to visually separate the facility from a nearby state road.

Jurors' comments: *"Good site plan. Strong exterior concept for a security-oriented facility with the special problem of a big building complicated by security issues and electronic shielding necessary for a sensitive compartmented information facility."*

Honorable Mention: Resource Manager's Office, Walter F. George-George W. Andrews Lakes, Alabama & Georgia. The design firm was Carr & Associates Engineers, and the design agent was Mobile District.

The facility accommodates project management, contract inspection, and lakeshore and natural resource management employees whose collective duties are to manage both the Walter F. George and George W. Andrews lakes and act as a liaison with public agencies and other Corps elements.

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The Resource Manager's Office accommodates Corps personnel who manage the Walter F. George and George W. Andrews lakes.



The Youth Activities Center gives teenagers a place to call their own.

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The architectural design solution to the office was an acknowledgement of the natural beauty of the lake and abundant natural vegetation.

Jurors' comments: *A simple, understated approach. Materials are in concert with the environment. Reflects a friendly, nice scale, understated.*

Honorable Mention: The Youth Activities Center, Fort George G. Meade, Md. The design firm was Cooper Lecky Architects P.C., and the design agent was Baltimore District.

The activities center, for youths ages 6-19, offers a gym, game and activity room, space for martial arts or a dance, a snack bar, and a teen lounge. It gives teenagers a place they can call their own.

The design addressed the problem of a young person's transition into the wider community beyond both home and

school. Each major activity was housed in an independent structure, giving it a special identity.

These components were arranged around a skylit space which acts as a Main Street. Each activity space along the street becomes an individual shop, awaiting entry, having a discrete identity, but is clearly part of the community.

The designers placed adult supervision areas where they are effective, but not intrusive.

There is a variety of commonplace materials used to establish the character of the environment. For example, the floor used in Main Street is lightly colored concrete—a sidewalk material. As the teens move indoors, the flooring shifts to tile, carpet and urethane gym flooring.

Jurors' comments: *...good site plan. . .fun. . .Socially responsible as a building type.*



What was once a parking area for earth moving equipment is now the home of the new U.S. Army Intelligence and Security Command headquarters building.



Active duty personnel, their families and retirees will buy their groceries at the new Fort Jackson commissary.

Landscape Architecture

Recognizing that functional, attractive exteriors are important to the function of many projects, the Corps honored six projects for excellence in landscape architecture. The winners ranged from a restored mining camp in Kentucky to a park surrounding a historic tree in Puerto Rico.

A landscape architecture project is defined as either a site development project or a landscape planting project.

Entries are judged on the basis of ingenuity and quality of landscape design and site planning concepts, efficient functional and spatial relationships of the solution, aesthetics, economy of design and compatible relationship with the surrounding environment. In addition, a landscape planting project is judged on the basis of the selection of plants in terms of landscape design principles, seasonal interests, low maintenance, application of the plant to the design and use of materials other than plants in the landscape.

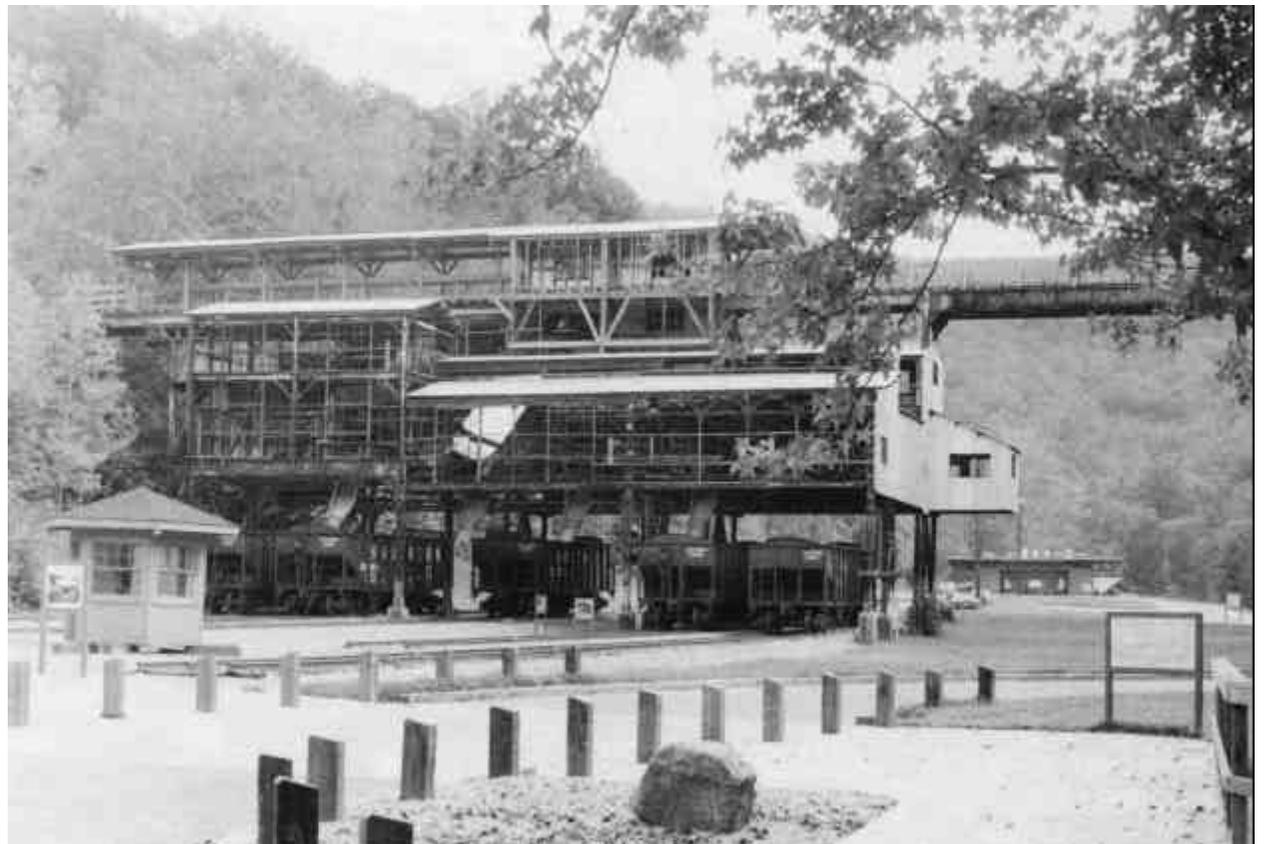
Entries in this category earned an Honor Award, two Awards of Merit and three Honorable Mention Awards.

Members of the landscape architecture jury were Gerald E. Patten, FASLA, president of the American Society of Landscape Architects and regional director for the National Park Service; Claire R. Bennett, FASLA, of Claire Bennett Associates and president elect of the American Society of Landscape Architects; and Brian S. Kubota of Peters, Kubota & Glen and past president of the American Society of Landscape Architects.

Honor Award: Blue Heron Recreation Area, Big South Fork National River and Recreation Area, Stearns and McCreary Counties, Ky. The design agent for the project was Nashville District. The design firms were Scruggs and Hammond, Inc.; Demartin-Marona-Cranston-Downes, Crisman Miller and Woodford, Inc., and GRW Engineers Inc.

The purpose of the project is to capture the daily living and working conditions in a mining camp and the surrounding region. Special consideration of the site's remaining structures and artifacts was required because of its inclusion on the National Register of Historic Places.

Visitors now arrive at the site by a new scenic road or an exciting ride on the Big South Fork Railway, a private enterprise that helps



The Blue Heron Recreation Area captures the daily living and working conditions in a mining camp while maintaining historical artifacts and structures.

reduce the need for parking. The sense of community is achieved by 14 ghost structures outlined in steel, roofed in metal and sitting on the sites of original structures.

Walking paths lead visitors in several directions from the train depot so visitors can explore the community, where they can hear the voices of housewives, shopkeepers and others discuss the concerns of the day. The reality of mining is found in a recreated mine entrance where 50 feet into the darkness, miners are shown digging and shooting an ore seam.

Jurors' comments: *This is an outstanding example of reclamation of a historic site for today's educational and recreational use. We feel that this high quality, simple, well integrated design is the result of the combined efforts of the architects, landscape architects and historians who made up the design team.*

Award of Merit: Ceiba Tree Park, Ponce, Puerto Rico. Jacksonville District was the design agent and Jorge de la Rio, FAIA, was the design firm for the project.

A single entrance park focuses attention on the Ceiba Tree, more than a hundred-years-old, which has long been an important cultural and natural resource. Indirect lighting accents the tree at night, and two semi-circular benches surround it.

A concrete and paver stone path extends from the entrance, surrounds the tree and meanders through the northeast part of the park to a gazebo, a traditional Puerto Rican townscape element. The remaining areas produce a green, open effect, which includes grass, native trees and flowing shrubs.

Jurors' comments: *Great care was taken in creating site conditions necessary for healthy tree*
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Visitors take an historic route at the Knights Ferry Recreation area.



More than a hundred years old, the Ceiba Tree accents Ceiba Tree Park.



The New River Dam blends into the landscape while controlling soil erosion.

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growth. The overall form, color, scale and detailing of the design reinforces the significance of the tree while reflecting a sensitivity to the character of the existing neighborhood.

Award of Merit: Knights Ferry Recreation Area, Stanislaus County, Calif. Sacramento District was the design agent, and the district and Judith Wolf Crutcher, AIA, served as design firms.

The site boasts the longest covered bridge west of the Mississippi River, a goldmill office and gold rush town from the 1860s and a Native American burial ground. The most significant problem facing designers was to make the project functional without compromising the historic or environmental integrity.

The design limits development near the Stanislaus River to maintain the environmental and aesthetic quality, and level land formerly used for agriculture was adapted for parking lots, recreation sites and other high-use areas to minimize tree removal and grading. Pedestrian traffic is funneled along historic routes and vehicular traffic is restricted or closely limited in those areas to preserve historic integrity.

The administration building and recreation facilities are field located to provide maximum supervision with minimal environmental impact.

Jurors' comments: *The design of the recreation area nicely balances visitor use and preservation of the natural and cultural landscape. Contemporary development accommodates recreation and educational use without adversely impacting the historic and natural character of the environment.*

Honorable Mention: New River Dam, Maricopa County, Ariz. Los Angeles District was both design firm and agent.

The project was designed to create an aesthetically pleasing surrounding for an erosion control structure already in place. The final plan combined two concepts, the naturalistic or camouflage approach and the artistic or mural approach. Minimal use of plant material in tandem with hardscape techniques helped blend the structure into the landscape and highlight native plants.

Landscape design provides the benefit of minimum maintenance using native drought tolerant or resistant plants.

Jurors' comments: *The project demonstrates the development of an innovative approach to the integration of a major engineering structure into the natural environment.*

Honorable Mention: Sergeants Major Academy, Fort Bliss, Texas. Fort Worth District was the design agent, and Fouts Gomez Architects, Inc., and Lewis and Associates were the design firms.



Soldiers get battlefield training in a Bavarian-style village called simulated City (MOUT facility).



Plants, requiring little water, and native stone mulches surround the Sergeants Major Academy.

The academy is in striking contrast to the otherwise spartan desert region. Designers chose a xeriscape approach, using low water requiring plants and native stone mulches and zoning plants according to similar water and microclimate conditions.

The nucleus of the complex is a courtyard for assembly and daily display, featuring plants with similar needs and concentrating colors and textures to provide year-round interest. Large masses of shrubs at the base of the building help cool the building by reducing reflected sunlight, and large deciduous shade trees create a more comfortable human environment further away from the building.

Jurors' comments: *The design uses water conserving plantings and other compatible materials in an arid landscape.*

Honorable Mention: Simulated City (MOUT Facility), Hohefnels Training Area, West Germany. Europe Division was the design

agency and Finanzbauamt, Regensburg of West Germany was the design firm.

This seemingly typical Bavarian village is the enemy, ingeniously designed to provide battlefield architecture to play wargames and train soldiers in the art of urban fighting. It comes to life through the battle gear of soldiers trying to outwit the town's dark corners, foxholes and hideaway places.

The town is interconnected by sewer tunnels, manholes, ramps and dark passages where the enemy can lurk. Some buildings stand with gaping holes or partially fallen walls and scattered masonry rubble. Exposed roof timbers lie diagonally across the rooms they crashed into as if in the aftermath of an air raid.

Jurors' comments: *This is a successful recreation of a traditional German town with planning concepts adapted for military training purposes, a design that minimizes the overall impact of the site.*