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Cover photo: Glacier National Park's Red Buses have returned to service, once again treating park visitors to a breathtaking ride on the Going-to-the-Sun Road. The buses were completely refurbished through a partnership with the Ford Motor Company — including conversion to a clean-burning fuel system — and retain the historic character that has made them a much-loved icon of the park since 1936. Photo courtesy Ford Motor Company.

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Catherine C. Lavoie

Finding Friends in Pennsylvania

If architecture reflects a society's culture, the design of houses of worship may offer an insight into its soul. For more than 300 years, the Religious Society of Friends, known also as Quakers, have practiced their religion in simple meetinghouses, structures that reflect an aesthetic often referred to as "Quaker Plain Style."

Nestled in communities throughout the Delaware Valley, more than 150 meetinghouses dating from as early as 1695 still stand. A multi-year project to research and document this regionally, and in some cases nationally, significant building type has produced a substantial body of knowledge adding to the scholarship on Friends meetinghouses. The documentation was undertaken by the Historic American Buildings Survey (HABS) of the National Park Service and is on public exhibition at The Athenaeum of Philadelphia through the end of 2002.

The exhibition, "Silent Witness: Quaker Meetinghouses in the Delaware Valley, 1695 to the Present," is sponsored by Philadelphia Yearly Meeting[1] of the Religious Society of Friends, HABS, the Quaker Information Center, and The Philadelphia Athenaeum to raise awareness of the richness of the architectural heritage of the Friends in the Delaware Valley. From The Athenaeum, the exhibit will go to the Arch Street Meetinghouse[2] in Philadelphia where it will be open to the public from February through May 2003. This will coincide with the spring session of Philadelphia Yearly Meeting when Friends from the region gather for annual business meetings.

Figure 1: Upper Providence Meetinghouse in Oaks, PA, is a good example of an intact, early 19th-century Friends meetinghouse. Jack E. Boucher, NPS photographer.

The documentation project was funded through a Congressional appropriation secured by then-U.S. Representative Peter Kostmeyer of Pennsylvania. Looking broadly at the meetinghouses in southeastern Pennsylvania, HABS comprehensively examined and selectively recorded a large sampling of structures. These written histories, measured drawings, and large-format photographs constitute a lasting, publicly accessible record.[3]

Tangible History

The Friends Meetinghouses of the Delaware Valley are important historic resources — tangible reminders of the contributions of Friends to the history of the region, starting with the founding of the Pennsylvania colony by a Quaker, William Penn, on the principle of religious toleration for all. Penn's "Charter of Privileges" offered colonists guarantees of civic, as well religious, freedom. This document later became the basis for America's Bill of Rights. Friends are also responsible for myriad landmark institutions of social reform in Philadelphia advocating humane treatment for the insane, the imprisoned, and the unempowered, including Native Americans, slaves, and the poor.

Included among the meetinghouses are many well-preserved colonial-era examples, which provide important venues for studying the area's early vernacular architecture (see Figure 1). Taken as a group, the meetinghouses survive as physical manifestations of the changing expressions of Quaker faith and practice. The number of structures and the changes they represent over more that 300 years of association with Philadelphia Yearly Meeting present an unparalleled opportunity to document the evolution of an important American building type.

Figure 2: Buckingham Meetinghouse erected in 1768 in Lahaska, PA, was the first of its type to be built in the North American colonies. It became a prototype for the development of the American Friends meetinghouse. Jack E. Boucher, NPS photographer.

Penn's Pennsylvania colony became a safe haven for those persecuted for their religious beliefs and home to a unique variety of religious groups. The most influential of these were members of the Society of Friends, the Quakers.

From the founding of the Society in England in 1652 until the passage of the 1689 Act of Toleration, Friends were unable to meet openly and without fear of reprisal. The followers of George Fox, founder of the Quaker movement, were forced to meet in houses, barns, and other buildings adapted for use as meeting places. Prior to the 1690s, only rarely did they attempt to build a structure for the explicit purpose of holding Quaker worship. In search of religious freedom, Friends began immigrating to Pennsylvania in 1681. In this region, religious toleration permitted them the freedom to pursue their beliefs and to develop buildings forms conducive to their silent worship and separate men's and women's business meetings.

American Meetinghouse Design

Early Quaker settlers adhered to a pattern for meetings established in England that also informed the plan of their meetinghouses. However, given the liberty to experiment with building design as well as religious practice, the colonial Friends eventually deviated from English patterns to create their own building forms. In so doing, Friends of Philadelphia Yearly Meeting developed a uniquely American meetinghouse that set the standard nationwide for nearly a century (see Figure 2).

Meetinghouse designs continued to evolve over time to adapt to changing patterns of Quaker faith and practice. With this in mind, HABS embarked upon a documentation program to identify and selectively record the meetinghouses of this region and provide the context for their evaluation and interpretation.

The HABS project began with a survey of all Friends meetinghouses within the greater Philadelphia area, which included Bucks, Chester, Delaware, and Montgomery Counties. The survey identified the essential elements of meetinghouses and, along with preliminary research, recorded historical data such as construction dates, accounts of prior meetinghouses on the site, and monthly/quarterly meeting associations. The information was compiled and examined both chronologically and by region to reveal specific types, periods, and patterns of meetinghouse development. Representative meetinghouse forms were then selected for recording based upon their architectural integrity and ability to exemplify a particular stage in the evolution of Friends' meetinghouse design over more than 300 years.

In the summer of 1997, a field team of architectural technicians working under the direction of HABS architects, the survey historians, and the HABS photographer produced measured drawings, written histories, and large format photographs of six meetinghouses in Pennsylvania, those in the towns of Merion (circa 1695-1714), Radnor (1718), Buckingham (1768), Chichester (1769), Caln (1726, rebuilt 1782), and West Grove (1903). The measured drawings conveyed characteristic features of each meetinghouse and included a floor plan(s), front and side elevations, structure (often documented in a section drawing), and details such as windows, doorways, bench-end profiles, facing benches, and partitions (see Figure 3). Smaller scale elements were also recorded, such as doorway hoods, shutters, hardware, date stones, carved graffiti, and horse mounting blocks.

HABS returned to the field in spring 1999 to expand the scope of the survey. Recognizing that Quaker culture and the influence of Philadelphia Yearly Meeting extended beyond Philadelphia and the surrounding counties, the second phase of the survey included structures built by meetings in other areas of Pennsylvania,

and in Delaware[4] and New Jersey. All together, approximately 150 meetinghouses were examined. With matching funds from the William Penn Foundation, during the summer of 1999 a second team recorded the meetinghouses at Sadsbury (circa 1747), Frankford (1775), Arney's Mount, NJ (1775), Downingtown (1806), Little Egg Harbor, NJ (1863), Germantown (1869), Middletown (remodeled 1888), and Southampton (1969). In an effort to round out the selection, large-format photography and short historical reports were also prepared for 13 other meetinghouses dating from 1708 to 1931.[5]

Wide Influence

In addition to creating a lasting public record, the HABS study was the first comprehensive examination of Friends meetinghouses historically associated with Philadelphia Yearly Meeting. Due to its location at the heart of Penn's colony, Philadelphia Yearly Meeting maintained a powerful influence on Quaker settlements throughout the colonies and the western migrations of Friends to Ohio and Indiana during the first few decades of the 19th century.

Even though the study focused on the Delaware Valley, the study's findings are relevant within a far broader context of Quaker practice and meetinghouse development. Beyond its academic usefulness, the study and sharing of information will enhance public awareness of the historical and architectural value of the meetinghouses and promote their preservation.

For HABS partners – Philadelphia Yearly Meeting, the Quaker Information Center, The Athenaeum of Philadelphia, and the William Penn Foundation – the project and its culminating exhibition and symposium were opportunities to further the understanding of the role played by Friends in the development of the region's history and architecture.

For the HABS program, the Quaker meetinghouse project was significant because it focused on recording an important vernacular building form. This was a goal of Charles E. Peterson, who founded HABS in 1933, saying:

> The [Historic American Buildings] Survey shall cover structures of all types from the smallest utilitarian structures to the largest and most monumental. Buildings of every description are to be included so that a complete picture of the culture of the times as reflected in the building of the period may be put on record.[6]

The genius of Peterson's vision is its all-inclusive outlook. The commonplace vernacular buildings that are a part of everyday life are far more representative of our culture than the exceptional high-style forms. Without them, we risk presenting a skewed perception of our culture to future generations.

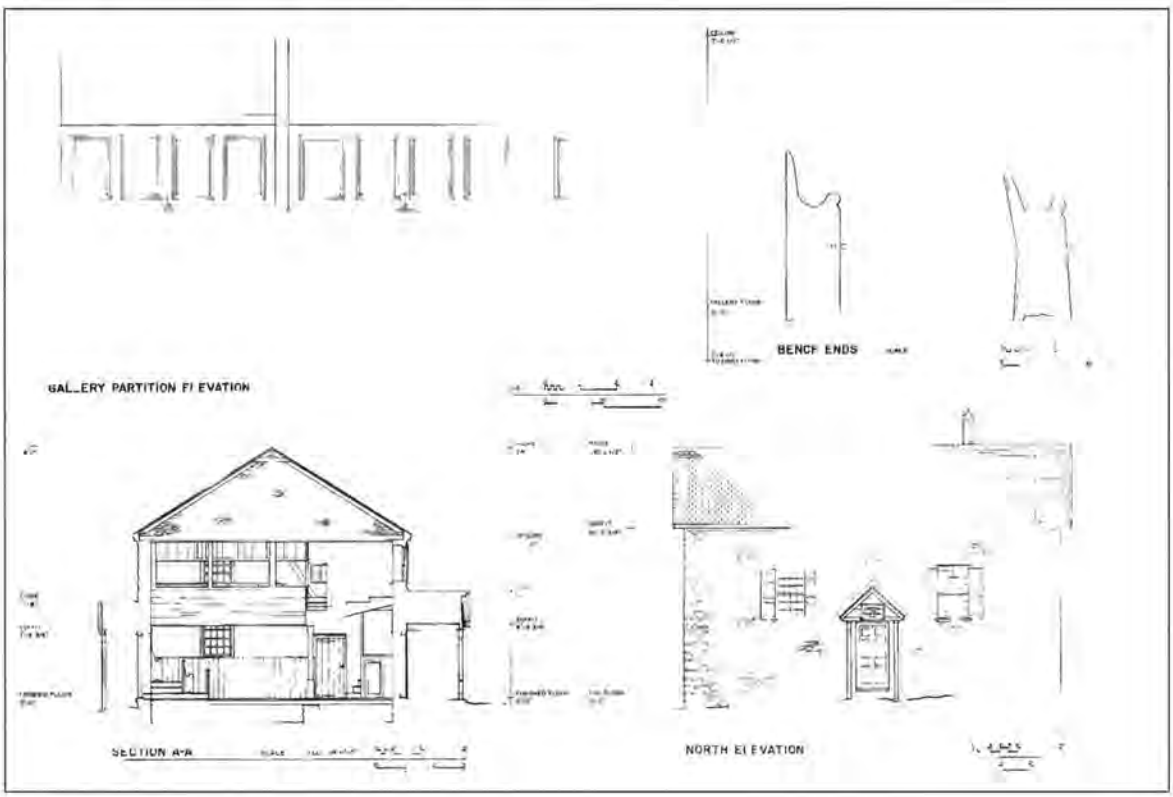


Figure 3: This drawing of Arney's Mount Meetinghouse, erected in 1775 in the vicinity of Mt. Holly, NJ, includes an elevation, section, and partition and bench end details. James McGrath, Jr., John P. White, and Kelly Willard, NPS delineators.

The HABS' recording of the Friends meetinghouses of the Delaware Valley is a model for capturing regionally significant vernacular architecture. By identifying a combination of exemplary and representative examples of significant vernacular building forms, a lasting account of these structures and the larger cultural patterns that they reflect can be preserved. From field surveys and contextual studies that examine all forms within a given region, criteria can be developed to target those for more comprehensive and detailed documentation.

The Friends meetinghouses are significant as important architectural forms and as effective venues for presenting a unique aspect of American history. With the HABS project, their silent story has been given voice.

Notes

1 Philadelphia Yearly Meeting is an event, a faith community, and an organization. The annual meetings are 4-5 day gatherings of the nearly 12,000 Friends among the 104 monthly meetings in the region.

2 The meetinghouse is located at 420 Arch Street. Additional exhibitions of *Silent Witness* are planned, but not yet confirmed.

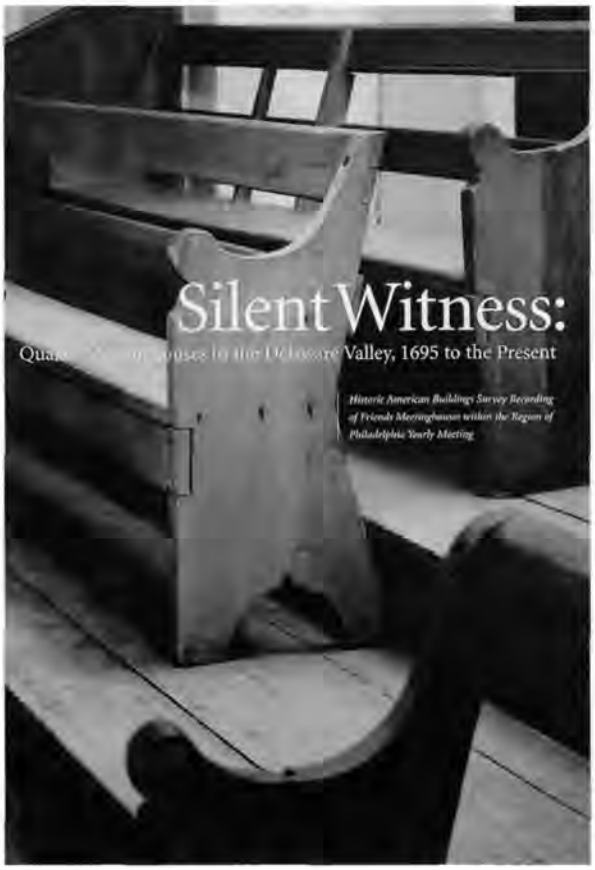
3 The material will be deposited with the Library of Congress, which has a longstanding partnership with HABS to maintain and provide public access to the HABS online collections at <www.cr.nps.gov/habshaer/>. The exhibit catalogue may be purchased for $10 at The Athenaeum or online at <http://quakerbooks.org >.

4 Delaware's Friends meetinghouses were not recorded as part of the HABS project because students at the University of Delaware, under the direction of Professor Bernard Herman, have undertaken measured drawings to HABS standards that will be donated to the HABS collection.

5 Of the 27 meetinghouses documented, 13 are listed in the National Register of Historic Places: Merion, Plymouth, Radnor, Old Kennett, Bradford, Buckingham, Chichester, Caln, Arch Street, Darby, and Race Street in Pennsylvania and Arney's Mount and Little Egg Harbor in New Jersey. Of these, Merion and Race Street are also National Historic Landmarks; the designation of Buckingham as a National Historic Landmark is pending.

6 Historic American Buildings Survey, *HABS Bulletin No. 3* (Washington, D.C.: Government Printing Office, 1933).

Catherine C. Lavoie, is a historian with the National Park Service's Historic American Buildings Survey and was a project manager and historian on the Quaker meetinghouse project.



The "Silent Witness: Quaker Meetinghouses in the Delaware Valley, 1695 to the Present," exhibition and symposium was made possible by grants from the Marshall-Reynolds Foundation, the HABS/HAER Foundation, the Thomas H. and Mary Williams Shoemaker Fund, and the following funds of Philadelphia Yearly Meeting: Bequests Funds, the Anna H. and Elizabeth M. Chace Fund, and the Publications Grants Group. The organizing committee included representatives from HABS; the National Park Service's regional office in Philadelphia; Philadelphia Yearly Meeting and its constituent meetings; the Quaker Information Center; Friends Historical Library, Swarthmore College; The Quaker Collection, Haverford College; and the Preservation Alliance of Philadelphia. The National Park Service team was led by project managers Robert Arzola, architect, and Catherine C. Lavoie, historian, and included Aaron Wunsch, Virginia Price, and Lavoie who served as historians for the project and conducted the field survey; John White, Roger Miller, and Arzola, who supervised the summer teams of architectural technicians; and Jack E. Boucher and Joseph Elliott, who undertook large-format photography.

Left, cover of the exhibition catalogue.

E. Blaine Cliver

Surveying Boulders at the Sacred Site of the Birdman

Lost in the vastness of the southern Pacific Ocean, Easter Island is the most isolated inhabited place on the face of the earth.

To its original Polynesian settlers, this was simply "the land," the center of the world, Te Pito te Henua. The first European to set foot on the island was the Dutch admiral, Jacob Roggeveen, who paid it a single day's visit on Easter Sunday in 1722. An expedition dispatched by the Spanish viceroy of Peru rediscovered the island in 1770, calling it San Carlos. Today it is called Isla de Pascua in the Spanish of Chile, the country that annexed it in 1888, or Rapa Nui in its natives' language.

By any name, Easter Island is known today for the ring of enormous stone statues, or moai, that dot its coastline (see Figure 1).

Figure 1: Rano Raraku, the moai (statue) quarry.

Though occupied by humans for only 1,600 years, this short period of habitation produced significant cultural remains that rival the monuments of older and more established societies.

The island's abundant archeological sites give the impression of a vast outdoor museum in a setting of breathtaking beauty. Three mountains rise nearly 2,000 feet. Between the mountains, smaller volcanic cones create a rolling, hilly, rugged landscape. On these cones are found the distinctive stone of the island, the brownish tuff of the stone quarry at Rano Raraku, the red scoria of Puna Pau where the topknots or pukao for statues were obtained, and the spectacular boulders at the ceremonial site of Orongo.

The Birdman of Orongo

Perched high above the South Pacific surf on a promontory formed by the partially collapsed wall of the volcanic crater Rano Kau, 1,785 petroglyphs are carved into the boulders of Orongo. Symbols of the life and culture of the people of Easter Island, 375 of these carvings are associated with the Birdman cult and show a praying man with a bird's head.[1]

As Alan Drake says in his book, "Easter Island, the Ceremonial Center of Orongo":

> This new myth and cult of birdman which replaced Rapa Nui's traditional religious practices and beliefs, contains powerful symbolic elements of death and rebirth. These include the symbolism inherent in birds, eggs, figures in praying or fetal positions, descent into the great ocean, re-climbing the cliff with a sacred egg, spring renewal rites, the shaving of the head, taking on a new name, undergoing ordeal and confinement. The motif of Birdman appears to be an archetypal symbol which arose from necessity out of the collective unconscious of the Rapanui, a response to extreme societal stress and the deeply felt needs of the island's population.[2]

At the scared precinct of Orongo known as Mata Magaru, the Birdman ceremonies took place.

The ritual revolved around the competition to obtain the first egg upon the return of great

Figure 2: Mata Ngarau showing the steep slope that drops over 300 yards to the sea.

flocks of sea birds to the islet of Motu Nui each September. Contestants were men of importance, men who probably selected servants called hopu to represent them. The hopu descended Orongo's sheer cliffs and using reed bundles for floats swam to Motu Nui where they secreted themselves in hiding places to await the laying of the egg. The hopu would scoop the egg into a small reed basket tied to his neck, swim back, climb the cliff, and present the egg to his employer who would then become the new Birdman.

The news of the event would be signaled with fires that marked the start of a celebration. The new Birdman shaved his head, eyebrows and eyelashes, and painted his head white. Taking the egg in his palm on a piece of tapa cloth, the Birdman and his companions danced down the mountain to Rano Raraku, near the statue quarry, his home for the coming year. Living under strict tapu, the Birdman was not allowed to associate with his family, wash, shave, or cut his nails for a full year until there was a new Birdman. At the end of his tenure, the Birdman returned to ordinary life[3] but was considered sacred throughout his lifetime and given special honors at death.[4]

The boulders that tell the Birdman story are on the southwestern end of the island and the petroglyphs are completely exposed to erosion by wind and rain. Situated on the very edge of a sheer cliff (see Figure 2), the boulders also are threatened by any weakening of the underlying soil, which could send them tumbling into the sea.

Over the years, since work was done on this site by the archeologist William Mulloy, concern has arisen about the stability of some of the carved boulders at the Mata Ngarau ceremonial center. Surveys of the site were conducted in August and December 1995 and in March 1996.[5]

In 2001, the World Monuments Fund sponsored an expedition by members of U.S. National Committee of the International Council on Monuments and Sites to Easter Island. One objective of the expedition was to establish the exact location of the boulders using a system of measurements that could be replicated to determine any movement. The work was conducted under an agreement between the National Park Service and its Chilean counterpart, the Corporación Nacional Forestal, El Servicio Forestal de Chile.

The survey team consisted of an engineer in private practice, Michael Schuller with Atkinson-Noland & Associates, and two architects from the National Park Service's Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER), Raul Vazquez and the author. We brought digital cameras and the total station system necessary to record accurately the positions of the carved boulders deemed most susceptible to movement.[6]

Conducting the Survey

To locate precisely the positions of the selected boulders and to be able to measure any future displacement, at least two points on each boulder had to be located with three spatial coordinates. Also, several points, or benchmarks, were needed in positions not subject to movement so that the points on the boulders could be related to stable points of reference in a future survey.

Since the island did not have its own total station system, the points on the boulders also had to be located so that hand tape measurements – slope dimensions – could be taken. In addition, the points had to be placed so that they could be located in the future.

With these parameters in place, the method of establishing points on the soft alkali basalt boulders was addressed.[7] The Mata Ngarau site is unprotected, subject to weathering, and visited by tourists. This meant that the points needed to be permanent. Also, because the boulders containing the petroglyphs are of great cultural importance and could not be marred or have the carvings damaged, the material used to establish the points had to be unobtrusive and benign.

Several approaches were considered. Any topical application would rely on the surface condition for permanence. Since this surface was granular and friable, any adhesive-applied target would need a large surface area to achieve permanence — approximately 1 square inch — and

would still be subject to being peeled off by hand. Smaller targets were tested when the points were being measured but were easily removed by wind as well as by hand. An applied liquid marker faced the same problems of surface condition and would have to be large enough to be distinguished from the variations in the boulder surface. The ultimate solution was to place small pins in the boulder surface that would be permanent, distinguishable from the surrounding stone, and as noninvasive as possible.

The survey team determined that small, 0.12-inch-diameter austenitic stainless steel pins could be inserted into an area of the boulder void of petroglyphs without causing future damage to the surface. The pins would be permanent, held in place with epoxy, and nearly imperceptible. Reference points of larger 0.25-inch diameter stainless steel pins would be installed within approximately 200 yards in stable ledges and other large rock formations devoid of petroglyphs. Also, it was anticipated that unobtrusive concrete posts containing steel pins could be used as reference points if installed in stable locations. (A number of these were placed along the edge of the soil slope to monitor erosion of the soil and movement of the slope inward.)

Field Work

Prior to drilling any holes, the team tested the procedures at a site across the crater Rano Kau where there are similar boulders that have no petroglyphs and are not located in a culturally sensitive context. Drilling was done with cordless electric drills using masonry bits of the same diameter as the pins. No flaking or spalling occurred when the stone was drilled; and neat, clean holes resulted. A small amount of epoxy was placed on the end of the pin before inserting the pin in the hole.[8]

Figure 3: Theodolite in operation.

Measurements taken of the test pin locations with the theodolite and compared to hand measurements taken with a steel measuring tape showed that, by using reflectors on the pins, measurements precise to within a few millimeters were possible.

On site at Mata Ngarau, station points for the theodolite were determined beforehand (Figure 3) so that pin positions avoided the petroglyphs, were visible from at least one station point (or two if possible), and had unobstructed slope dimensions (line-of-sight) in the majority of positions allowing park staff to take periodic hand measurements.

Drafting tape was placed on the boulder surface and a mark seen through the theodolite put on the tape to indicate were the hole was to be drilled. The holes were drilled through the drafting tape with a 0.125-inch drill, and pins of the same diameter were epoxied into the hole.

Two pins were placed in each of five selected boulders. In two cases, three pins were set; and in one boulder, only one pin was placed. It was felt that a minimum of two points was needed to determine any displacement or direction of movement in the boulder. Three pins were also placed in the surrounding non-culturally-sensitive ledge to act as reference points. These pins were larger — 0.25 inch in diameter — so that they could be found more easily in the future.

After all the pins were installed, the location of each was surveyed with total station and its position located in space using the pins placed in the ledge. In addition, the concrete monuments were also surveyed with the same points of reference. To take these readings accurately, small pieces of reflecting tape were adhered to the top of each pin. However, after taking readings from all points it was discovered that the oblique angle at which the laser sometimes hit the reflector was causing distortion. A second set of readings was made using a small hand-held reflector placed perpendicular to the surface of the pin and at its center so that the laser hit the reflector surface more directly at its point of contact with the pin. This second method increased the accuracy of the measurements.

Table 1 shows a comparison of dimensions between points taken by hand measurement and with total station. Table 2 is a comparison of

Table 1						
(Note: Point designations are based on the numbering system developed for the Mata Ngarau petroglyphs as found in "The Rock Art of Easter Island," by Georgia Lee, p. 137.						
Measurements Between Points (meters)						
Points	**X Diff**	**Y Diff**	**Z Diff**	**Slope Distance**	**Diff. in mm.**	**Measured Slope**
4N - 18N	1.208	9.506	0.043	9.582	0.084	9.582
22N - 18S	0.558	2.730	1.985	3.421	16.269	3.437
22S - 18S	2.371	3.188	2.165	4.524	15.771	4.540
4aN - 6aS	0.509	1.526	0.255	1.629	0.863	1.630
4aW - 6aS	1.197	0.892	0.420	1.551	0.865	1.550
6aW - 16	1.613	2.178	0.485	2.753	2.071	2.755
6aW - 9E	0.270	2.788	0.601	2.864	5.539	2.870
9W - 22N	1.185	5.376	1.797	5.791	3.376	5.794
BM5 - BM3	7.718	6.600	1.005	10.205	15.064	10.220
BM2 - BM1	1.700	9.034	0.543	9.208	2.817	9.211

slope measurements (point-to-point) of those points surveyed from more than one station point (not all points could be seen from more than one station point). As can be seen from Table 2, these measurements have standard deviations of less than 0.25 inch. The comparison of hand measurements with those taken using the instrument, Table 1, shows that most are quite close, differing less than 6 millimeters. Three of the measurements differ by about 16 millimeters or, about 0.64 inch. Because of the close correlations found in Table 2, it is assumed that these differences result from tape curvature (sag) in the hand measurement or from the fact that the pins in the bench marks did not have the center points marked and, therefore, could have a variance of about a centimeter — the diameter of the pin.

In addition to the total station measurements, the scenes in several photographs taken by Mulloy in 1974 and found at the local museum were replicated.[9] Comparable views were obtained for nine of the photographs. No major displacement is evident in their position from 1974 to 2001. It should be noted that while the photos do not offer evidence of any appreciable displacement over 27 years, small changes might not be detectable in the scale of the photographic images given the differences in focal length, lens type, camera elevation, and shadow.

The survey team recommended taking measurements every 6 months; to date, this has not revealed any movement. If these measurements begin to vary by 0.75 inch, then a new total station survey should be done. The three-dimensional coordinates for each pin can be compared with the benchmark coordinates to determine the direction of movement. Absent the need for it earlier, a second total station survey should be undertaken in 2006.

Conclusion

No evidence has been uncovered of discernible movement in the boulders of Mata

Table 2						
Slope Distance from Pin 1, 0 at Pin 2, to Points with Common Station Points (in meters)						
Point	**SP 1 data**	**SP 2 data**	**SP 3 data**	**Average**	**S D in mm.**	**Mean Var in mm**
Pin 2	93.011	93.011	93.010	93.011	0.615	0.454
Pin 3	182.179	182.180	182.176	182.178	1.843	1.370
4N	17.108		17.115	17.111	4.408	3.117
18N	21.829	21.825	21.831	21.828	2.866	2.081
18S	22.343	22.339	22.343	22.341	2.295	1.767
22S		26.167	26.175	26.171	5.218	3.690
4aW	20.520		20.525	20.522	3.052	2.158
4aN	19.675		19.678	19.676	1.653	1.169

Figure 4: The volcanic ridge at Orongo.

Ngarau at Orongo—at least not within the past 25 years. However, this does not mean the site is not in danger. Sitting precariously as it does above the sea, Orongo is a site waiting for a landslide (see Figure 4).

The stability of the petroglyphs at Mata Ngarau is endangered by the weathering and erosion of the supporting rocks and soil that make up the crater rim. Clearly portions of the crater have already collapsed, reducing the height of the rim. This weathering of the rock formations has produced a 30-degree slope (see Figure 2) that comes to within 3 feet of the lower boulders.[10]

An earlier expedition evaluating the hydrogeology of Mata Ngarau reported that the site was threatened by erosional processes of both wind and wave action more than 300 yards below, causing the cliff face to fall away at an angle of 70 degrees:[11]

> A secondary erosion mechanism is creep and sliding of surface soils (about 30 to 60 cm thick) on which the boulders rest. Repeated wetting and drying of soils can result in a gradual movement down the 30° slope towards the cliff face. Periods of heavy rain could, however, saturate the thin soil layer, which could lead to sudden slides and rapid movement.[12]

Moisture collects on site in puddles where foot traffic compacts the soil or soaks in underneath the boulders and exits at the cliff face. Increasing the vegetation throughout the area would increase soil stability as well as the ability of the area to carry and release moisture back to the atmosphere.[13]

The petroglyphs are carved into the boulders that have eroded and will continue to do so until they no longer exhibit evidence of the Birdman. Stabilization of the site through the use of concrete shoring is possible but such intervention can be as destructive as a landslide to the integrity of the site. We should enjoy the petroglyphs and the austerity and seclusion of Orongo as it is for now. Ultimately, relocating the boulders to a museum might be a better fate than their loss. In this way, the petroglyphs would be protected in a way they never would be in situ.

Notes

1 Georgia Lee, *An Uncommon Guide To Easter Island,* (Arroyo Grande, CA: International Resources, 1990), 69.

2 Alan Drake, *Easter Island, The Ceremonial Center of Orongo,* (Old Bridge, NJ: Cloud Mountain Press, 1992), 31.

3 Ibid., p. 41.

4 Lee, *op.cit.*, 44.

5 See reports: K. Hall Nicholas, "Observations and Preliminary Assessment of the Stability of the Mata Ngarau Area, Orongo Ceremonial Village"; Raúl Marchetti Salazar, "Pre Informe Visita de Inspeccionamiento"; J. Vouvé and B. Clement, "Summary of the Final Report of the Mission to Orongo, Easter Island."

6 Total station is a system consisting of a theodolite with laser distance-measuring capacity.

7 A.E. Charola, "Summary of the Final Report of the Mission to Orongo, Easter Island," submitted by Profs. J. Vouvé and B. Clement to World Monument Fund, March 1996, p. 2.

8 In the tests, a small amount of epoxy had oozed onto the boulder surface. This was addressed in the final placements by leaving the drafting tape in place until the pins were set and the epoxy had begun to harden. When the tape was removed, the excess epoxy went with it.

9 W. Mulloy, "Investigations and Restoration of the Ceremonial Centre of Orongo, Easter Island," Bulletin 4, Easter Island Committee, International Fund for Monuments Inc., 1975.

10 Raúl Marchetti Salazar, "Pre Informe Visita de Inspeccionamiento," prepared for World Monuments Fund Mission, November 1995.

11 Charola, op.cit., p. 2.

12 Michael Schuller and Elena Charola, "Soil Erosion Issues, 2001" prepared for World Monuments Fund (Mission of April 2001).

13 Ibid.

E. Blaine Cliver is the manager of the National Park Service's Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscape Survey in Washington, DC.

Photos by the author.

Audrey T. Tepper

Faded Landmark to First Class Hotel

Hotel Monaco a Preservation Success Story

After decades of decline, many American cities are experiencing comebacks. A variety of factors are bringing people back downtown to live, work, shop, and play. In many cases, the most inviting incentives for this urban migration are the places that for years served as symbols of urban decay. Old buildings are being reborn and bringing new life to city centers around the Nation.

One tool that is makes this possible is the Federal Historic Rehabilitation Tax Credits program administered by the National Park Service, the network of State Historic Preservation Offices, and the Internal Revenue Service. Extraordinary, as well as ordinary, historic buildings in urban centers and elsewhere are being reused sensibly and sensitively. Preservation tax credits can't make bad balance sheets work, but they can give good projects the extra financial margin needed to retain the character that makes a building special.

Exterior view of the F Street NW elevation, now the main entrance to the hotel.

The tax credits program is true public-private partnership that involves local, State, and Federal officials working closely with private property owners and developers. The tax credits help to save historic buildings and streetscapes, revitalize neighborhoods, provide affordable housing, raise property values, generate State and local revenues, and minimalize sprawl. This win-win arrangement also helps to prove historic preservation makes good economic sense.

This article highlights one such partnership — an excellent example of how a team of dedicated individuals from multiple organizations combined public dollars with private investment to save a national treasure.

General Post Office

In July 2002, the former General Post Office Building (also known as the Tariff Commission Building) in Washington, DC, reopened its doors as the luxury Monaco Hotel, operated by the Kimpton Group of San Francisco, CA. The General Post Office Building has always been federally owned and the General Services Administration (GSA), its current landlord, signed a 60-year lease with the Kimpton Group for the property. The new use as a hotel required only minimal changes to the building's historic architectural fabric and retained substantial public access to its interior.

The General Post Office Building, occupying an entire city block between E, F, 7th, and 8th Streets NW, was designated a National Historic Landmark in 1971. It was designed in two phases by two pre-eminent 19th-century architects: Robert Mills, also known for the Washington Monument and the Treasury Building, was responsible for the first phase between 1839 and 1844; Thomas U. Walter, architect of the dome and wings of the U.S. Capitol, completed the second phase between 1855 and 1866.[1]

The General Post Office is one of this Nation's very first Federal buildings—where the United States Postal Service became a national

HABS photocopy of U.S. General Post Office, from Harpers, vol 20, 1859.

institution, where the Pony Express was conceived, and where the first public telegraph office was located. The building housed a hospital during the Civil War, and General Pershing's office at the end of World War I.

The General Post Office's architectural design is masterful. To quote its nomination to the National Register of Historic Places, "this beautifully scaled and finely detailed building is a tour de force of restrained neo-classical design and an outstanding example of civil architecture in this country."[2] It was the first marble building constructed in Washington after Mills proved to Congress that marble would weather better than the Aquia Sandstone used on the White House and the Capitol. It was also one of the first public buildings in the United States to introduce the Italianate architectural style with a plan that reflects a Renaissance palace with its long vaulted corridors.[3]

Both phases of the General Post Office's construction are noteworthy for their technical achievements. Mills used a vaulted-masonry structural system of marble veneer on a brick substrate. These materials were chosen so the building would be as fireproof as possible. The brick was set in hydraulic cement that dried rapidly and allowed construction to proceed more quickly than usual. Walters employed wrought iron I-beams resting on brick piers that were then covered with plaster, a structural system that is significantly lighter than the first phase's solid masonry. The General Post Office may also have been the first building in Washington to be illuminated with gas.[4]

Finding the Right Tenant

Vacant since 1988 and only minimally occupied for years before that, the building's massive construction and rigid architectural plan proved too costly and inflexible for contemporary office use by the Federal Government. Its distance from other Federal enclaves in the city also diminished its chances for occupancy. As a result, agency after agency refused to reuse the space and the building's fortunes and fabric continued to decline.

In the late 1990s, through a provision in Section 111 of the National Historic Preservation Act of 1966,[5] GSA sought to "outlease" the building to private developers.[6] GSA had little experience with this process and the path to finding the right tenant was long and arduous. GSA had many partners, however, to help it through this exercise, including the District of Columbia Office of

Library space before and after rehabilitation.

The rehabilitation of The Monaco preserved elegant features of the original design like this spiral staircase.

Historic Preservation, which sought for years to protect this important resource. The National Park Service was involved in part because it manages the National Historic Landmarks program. The community, including local businesses, was also invited to comment.

The surrounding neighborhood, called the Pennsylvania Quarter, is at the eastern end of downtown Washington, DC. Over the last 5 years it has experienced a profound physical and economic transformation. In 1997, the MCI Center opened across the street from the General Post Office bringing a new sports and entertainment venue that draws hundreds of thousands of people to the neighborhood annually. A block away, the International Spy Museum opened in summer 2002. The Smithsonian's National Portrait Gallery (closed for rehabilitation until 2004-2005), formerly the Patent Office Building and also designed by Robert Mills, is directly across the street. A few blocks north, the new 2.3 million square foot Convention Center will open in spring 2003.

In June 1997, GSA issued a "Request for Developers Qualifications and Adaptive Reuse Concepts"[7] to determine how best to use the building. In April 1998, GSA selected the Kimpton Group's proposal to turn the General Post Office into a hotel over other finalists who presented schemes for housing and retail. GSA saw a "good fit" in transforming former office spaces lining grand marble corridors into 184 individual guestrooms and keeping the more formal spaces, such as the library and the "dead-letter" room, undivided for meetings and social gatherings.

Hotel Monaco

After selection, the Kimpton Group still faced many challenges. To quote a recent article in the Washington Post Magazine, "No one said it would be easy opening a trendy hotel in a 160-year-old abandoned government office building."[8] The biggest obstacle was the leasing process, which was unprecedented for all parties involved. It is a credit to the patience and persistence of all of the participants that they remained

Preservation Tax Credits Box Score

Since the program began in 1977:[a]

- More than 29,000 historic buildings rehabilitated
- More than $25 billion in private funds invested
- More than 60,000 units of low- and moderate-income housing created

In fiscal year 2001:[b]

- A record setting $2.7 billion in projects
- Nearly 46,000 local jobs created
- Top 10 States by *value* of projects —
  - California – $258 million
  - Ohio – $236 million
  - Maryland – $206 million
  - Florida – $187 million
  - Missouri – $175 million
  - Ilinois – $165 million
  - Massachusetts – $124 million
  - Pennsylvania – $102 million
  - New York – $102 million
  - Indiana – $94 million
- Top 10 States by *number* of projects —
  - Virginia – 76
  - Georgia – 61
  - Louisiana – 59
  - Ohio – 53
  - Pennsylvania – 50
  - North Carolina – 40
  - New York – 34
  - Missouri – 32
  - Florida – 31
  - Indiana – 28

committed to the project throughout the nearly 2 years it took to negotiate and sign the lease.[9]

Kimpton also had to satisfy local and Federal preservation reviews. Because the building is Federal property and Federal funds were used, Section 106 of the National Historic Preservation Act applied, thus involving the Advisory Council on Historic Preservation. The expenditure of Federal funds came as part of the leasing package in which GSA agreed to pay for the work primarily on the exterior of the building, including restoring the masonry, repairing the original windows, and making the building accessible. These expenditures will be recouped through a profit-sharing arrangement with the lessee. In addition, the approval of the Commission of Fine Arts, an independent agency that oversees the "appearance of the nation's capitol,"[10] was needed for the exterior changes, even though they were repair-oriented and minimal.

Typical guestroom corridor (on the Walter side of the building) before and after rehabilitation.

Kimpton applied for Federal preservation tax credits that, if approved, would provide a 20 percent tax credit for the rehabilitation of the General Post Office. The process started with an application to the District of Columbia Office of Historic Preservation; State Historic Preservation Offices are always the first points of contact for tax credit program applicants. The credits were a very important part of Kimpton's overall funding package, allowing them to undertake a higher level of preservation work than might otherwise be possible — something this exemplary building truly deserved. The District of Columbia office reviewed the application and then forwarded it, with comment, to the National Park Service for final review and approval. Both offices reviewed the application to assure the intended treatments met "The Secretary of the Interior's Standards for the Treatment of Historic Properties." These Standards, created and maintained by the National Park Service, are the central document of preservation practice today.[11]

In addition to meeting the Secretary's Standards, to be eligible for the credits a building must meet several other requirements. For starters, a building must be "historic", which generally means that it is 50 years or older and has architectural integrity and/or historic significance. It must also be listed, or be eligible for listing, in the National Park Service's National Register of Historic Places, which is "this nation's official list of cultural resources worthy of preservation."[12] Because the program is for investment tax credits, a building must be income producing, as opposed to an owner-occupied private residence. Finally, dollars spent on rehabilitation must also meet certain financial criteria set by the IRS, and construction must be completed within a certain time frame.

Unique Challenges

Because the Secretary's Standards require the retention of distinctive spaces, features, and finishes on both the interior and exterior of his-

toric buildings, the General Post Office had several critical issues to resolve. For example, to keep the vaulted ceilings exposed in the guestrooms, bathrooms were constructed as rooms-within-rooms so the ceilings above remained uncovered.

A particular challenge was the installation of new wiring, cables, and other systems throughout a building with walls that were not aligned and were constructed of solid masonry up to 3-feet thick. Eventually engineers placed utilities below the first floor ceiling and connected vertically at discreet locations into the rooms above. In the guestrooms, mechanical equipment was tucked above the bathrooms.

The only new construction is in the interior courtyard where an addition houses the restaurant, a crucial profit center for the hotel. The courtyard is not visible from the main public thoroughfares, is small in scale, and is both clearly differentiated from, and compatible with, the original building.

This noteworthy project involved numerous public agencies and private entities, and the use of the Federal tax credits helped make it possible. Kimpton and its team of consultants have successfully completed other tax credit projects in San Francisco, New Orleans, and Salt Lake City. Although the rehabilitation of the General Post Office was perhaps their most challenging project, the rehabilitation is a true preservation success story and testimony to creative business practices.

Typical guestroom before and after rehabilitation. Note installation of bathroom where the groin-vaulted ceiling remains exposed.

The Federal Historic Rehabilitation Tax Credit program is proven as an effective way to promote the revitalization of communities and encourage private investment in historic rehabilitation. The National Park Service continues to look at ways to improve the program, including better access to information – online at < www.2.cr.nps.gov>, in seminars and technical publications, and through the State Historic Preservation Offices and other partners – and streamlined Federal requirements to make the tax credits more consistent with other Federal investment programs.

Notes

1 "Proceedings of the Round Table and Public Forum, General Post Office, Washington, District of Columbia: Report of the Roundtable," prepared for the U. S. General Services Administration, GSA Portfolio Management, National Capital Region, prepared by the National Building Museum and Marcia Axtmann Smith, Design/Communication, Alexandria, VA (September 1997), 5.

2 National Register of Historic Places Inventory – Nomination Form (6900311 NHL): Tariff Commission Building/General Post Office, under Statement of Significance, March 8, 1970.

3 Pamela Scott and Antoinette J. Lee, *Buildings of the District of Columbia* (Oxford University Press, 1993), 191-193.

4 <w3.gsa.gov/web/p/interaia.nsf>.

5 36 U.S.C. 470.

6 "Proceedings of the Round Table and Public Forum, General Post Office, Washington, District of Columbia: Report of the Roundtable," op. cit.

7 Ibid.
8 Steven Pearlstein, "Heartburn Hotel," *Washington Post Magazine*, August 25, 2002, p.15.
9 <http://www.heritage-consulting.com/tariff.htm>
10 <www.cfa.gov>
11 Information on the Federal Tax Incentives Program is available at <www2.cr.nps.gov/tps/tax/index.htm>.
12 <www.cr.nps.gov/nr/>

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a *Federal Tax Incentives for Rehabilitating Historic Buildings: Twenty-fifth Anniversary Report*, U.S. Department of the Interior, National Park Service, National Center for Cultural Resources, Heritage Preservation Services, Technical Preservation Services Branch (Washington, DC, November 2001), 2-3.
b *Federal Tax Incentives for Rehabilitating Historic Buildings: Statistical Report and Analysis for Fiscal Year 2001*, National Park Service, U.S. Department of the Interior, National Center for Cultural Resources, Heritage Preservation Services Division, Technical Preservation Services Branch (Washington, DC), 1

Audrey T. Tepper is a historical architect with the National Park Service's Technical Preservation Services Branch in Washington, DC, providing technical assistance and review for preservation tax credit projects for the District of Columbia, as well Minnesota, New Jersey, Vermont, and Virginia.

Photo credits: "After" photos by David Phelps, courtesy the Kimpton Group; "before" photos courtesy Heritage Consulting Group.

Partners and Project Profile

The Hotel Monaco
701 E Street NW, Washington, DC 20004
202-628-7177
www.monaco-dc.com/

Project Costs*:
GSA: $5 million.
Kimpton: $40 million
Federal Tax Credit: $8 million.
*(These figures are approximate)

General Services Administration: www.gsa.gov
Assistant Regional Administrator, Public Building Service: Anthony Costa; Restoration Architect: Andrea Mones; Legal Counsel: Jeffery Domber; Project Executive: Jag Bharagava; Preservation Architect: Mary Oehrlein, Oehrlein and Associates, Washington, DC (also served as the preservation architect for the Kimpton Group)

Kimpton Group: www.kimptongroup.com
Chief Executive Officer: Tom LeTour; Vice President Acquisitions and Development: Richard Walker; Project Supervisor: Ron Shelton; Director of Construction: Don Trainer; Preservation Consultant: John Tess, Heritage Consulting Group, Portland, OR; Project Architect: Michael Stanton Architecture, San Francisco, CA; Restaurant Architects: Adamstein and Demetiou, Washington, DC

General Contractor:
J. A. Jones/Tompkins Builders, Washington, DC

District of Columbia Historic Preservation Office (Office of Planning)
Acting Manager, Historic Preservation Office: David Maloney

Advisory Council on Historic Preservation: www.achp.gov
Assistant to the Executive Director: Ralston Cox

Saving America's Treasures

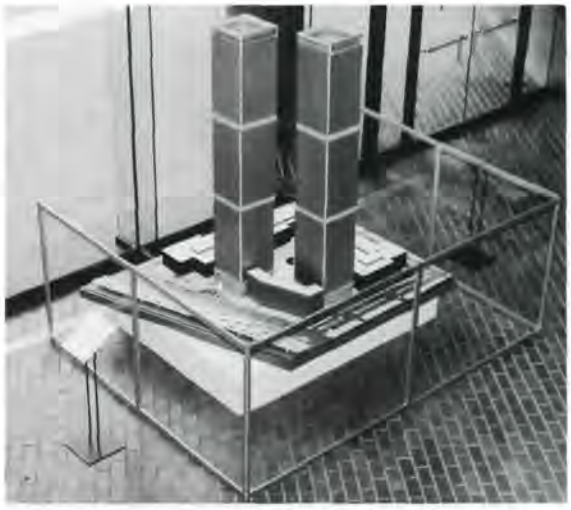
Since 1999, nearly $125 million has been invested in the preservation and conservation of nationally historic structures, sites, and collections through Federal Save America's Treasures Grants.

These grants have been used to help preserve Thomas Jefferson papers at the Massachusetts Historical Society, Frank Lloyd Wright's Taliesin in Spring Green, WI, the ancient cliff dwellings of Mesa Verde National Park in Colorado, and the Star Spangled Banner at the Smithsonian Institution.

The National Park Service administers the grants in partnership with the National Endowment for the Arts, the National Endowment for the Humanities, the Institute for Museum and Library Services, and the President's Committee on the Arts and Humanities. A total of 380 grants have been awarded to State, local and tribal governments, non-profit institutions, and Federal agencies for projects in all 50 States, the District of Columbia, Puerto Rico, and the Midway Islands.

Photo credits: All photos from Save America's Treasure's grant applications.

Rosa Parks Bus, Henry Ford Museum and Greenfield Village, Dearborn, MI. *On December 1, 1955, Rosa Parks' quiet, courageous act of dignified defiance took place on this Montgomery, AL, bus. Her action was the catalyst for the Montgomery bus boycott and the modern Civil Rights Movement. Sold for salvage, used for storage and heavily vandalized, the bus was nearly lost until it reappeared for rescue on an Internet auction site. The museum will use its grant to restore the bus to its 1955 appearance for exhibit and interpretation.*



World Trade Center Model, Octagon Museum/American Architectural Foundation Collection, Washington, DC. *This 7-foot-tall model illustrates the first six buildings of New York's World Trade Center. The presentation model was fabricated in the model shop of Minoru Yamasaki Associates, the center's architect, to show the Port Authority of New York and New Jersey, the owners, what their complex would look like upon completion. The 1969 model has been damaged over time; the grant will support restoring a small scale version of this now-lost icon of the New York City skyline.*

The grants are awarded competitively and require a dollar-for-dollar non-Federal match. That challenge has been met through the commitment of hundreds of partners — States, communities, corporations, foundations, and individuals — who have offered their time, their money, and their support. Organizations such as the National Park Foundation and the National Trust for Historic Preservation have raised funds to match multiple grants.

The grants are a key component of the overall Save America's Treasures program launched by the White House Millennium Council, the National Trust, and the National Park Service in 1998 to focus public attention on the importance of this national heritage and the need to save the Nation's treasures at risk. More information about the grants can be found on the National Park Service Web site at <www2.cr.nps.gov/treasures/>. In addition, information about future grant cycles is available in a recorded message by calling 202-513-7270, press 6, or by sending an e-mail to NPS_treasures@nps.gov.

The 2002 grants to 79 recipients were announced this fall and include the projects shown here.

Edited by Rebecca Shiffer
Architectural Historian
Technical Preservation Services
National Park Service

St. Johnsbury Athenaeum, St. Johnsbury, VT. *Horace Fairbanks, manufacturer of the world's first platform scale, built the Athenaeum as a gift to the people of St. Johnsbury in 1871. The building and its furnishings, art, and rare books remain intact. The grant will be used to upgrade the mechanical and electrical systems that threaten the continued active use of this National Historic Landmark and the preservation of the Athenaeum.*

Mimbres Pottery Collection, Minneapolis, MN. *The Mimbres people virtually vanished from the archeological record circa A.D. 1150. The foundations of their houses and their pottery are the only evidence of their world. The subjects of these remarkable black-on-white bowls include animals, mythical creatures, and abstractions of mountains, clouds, and plants. The grant will support their conservation.*

Memorial Hall, Phoenix Indian School, Phoenix, AZ. *As the only non-reservation Bureau of Indian Affairs school in Arizona and one of the largest Indian Schools in the country, the Phoenix Indian School played an instrumental role in the emergence and maturation of the Federal Government's policies toward the education of Native Americans in the 20th century. The Mission-Revival style Memorial Hall is the centerpiece of the school. Funds will assist in the restoration of the building.*

Utica State Hospital, Utica, NY. *Opened in 1843, this National Historic Landmark is one of the Nation's premier Greek Revival structures and is also notable as one of the first state insane asylums for the poor. Asylum doctors published the first periodical for psychiatric professionals and pioneered the treatment of the mentally ill through useful activities. Vacant since 1978, the grant will support restoration of the first floor and mechanical systems so that community groups can use the building.*

Mark Woods

An Appalachian Tale
Restoring Boone's Wilderness Road

The bison were the first through Cumberland Gap, finding a break carved by wind and water in the Appalachian Mountain chain. Then Native Americans followed what they called the Warrior's Path when traveling between the Ohio Valley and the Shenandoah. In 1775, Daniel Boone was hired to mark the trail. Boone's Wilderness Road, which brought wagons and a flood of European settlers across the Appalachians, was "the way west" until the mid-19th century.

In 1908, 20th-century modernization came to the mountains in the form of a Federal demonstration project by the U.S. Department of Agriculture's Bureau of Public Roads. One of several "Object Lesson Roads" designed to prove the efficacy of new road building techniques, a 2.5 mile ribbon of crushed, compacted, and rolled limestone highway was constructed through Cumberland Mountain to link the towns of Middlesboro, KY, and Cumberland Gap, TN.

As the number of vehicles and commercial traffic using the paved road grew, so did the danger. Before long, this section of U.S. Highway 25E was saddled with yet another – but tragic – nickname: Massacre Mountain.

In 1940, Congress established Cumberland Gap National Historical Park to preserve the natural gap, or low point, on Cumberland Mountain because of its national significance in the early years of American westward expansion. Part of the dream for the park was to remove the highway and restore the Cumberland Gap and Wilderness Road to its 1780-1810 appearance.

More than 60 years later, that dream has come true. The asphalt is gone. The traffic is gone. All that is left is the Gap—almost as Daniel Boone knew it.

Tunnels Through the Mountain

The restoration of Cumberland Gap began in 1973 with the signing of a law[1] directing the National Park Service to construct tunnels through Cumberland Mountain in order to remove traffic from the historic corridor traversed by U.S. Highway 25E for more than 50 years. Two objectives were detailed in the legislation: restore the historic appearance of the Gap and Wilderness Road and improve traffic safety for motorists.

Thus began a multiagency effort spanning more than two decades to open the most modern vehicle tunnels in the world and to take a landscape 220 years back in time. Through a combined planning, design, and construction effort led by the National Park Service and the Federal Highway Administration, the project would ultimately cost $265 million and include:

- rerouting 2 U.S. highways
- twin 4,600-foot tunnels
- 5 miles of new 4-lane approaches to the tunnels
- 2 highway interchanges
- 7 roadway bridges – 4 in Kentucky and 3 in Tennessee
- a 200-foot railroad bridge (a steel box girder type recognized by the American Institute of Steel Construction for design excellence)
- repair and reuse of an abandoned railroad tunnel under existing U.S. Highway 25E to house numerous utilities and serve as a part of a greenway trail system
- 2 pedestrian bridges on hiking trails
- 4 new parking areas inside the park

With the project authorized in 1973, the process of creating design alternatives and construction plans began. The 1978 Federal Highway Act brought the first funding for tunnel construction. Project design work started in 1979 and construction in 1985 on a pilot tunnel 10-feet wide, 10-feet high, and 4,100-feet long drilled from both sides of the mountain. The pilot tunnel took 2 years to drill and revealed the geologic and hydrologic challenges facing the project—springs that would produce 450 gallons of water every minute regardless of the weather,

voids with thick clay infills, caverns as tall as 85 feet, and a lake of water 30-feet deep.

To keep the tunnels dry, each is lined with a waterproof PVC membrane that is covered with a 10-inch-thick concrete lining. Groundwater drains into a stream that empties into Little Yellow Creek within the park. Water from the caverns flows through a 5-foot-diameter steel pipe under the roadway and into the cavern on the opposite side of the tunnel. During construction, daily water quality monitoring was required; today water flow is monitored in the tunnel's Kentucky control room.

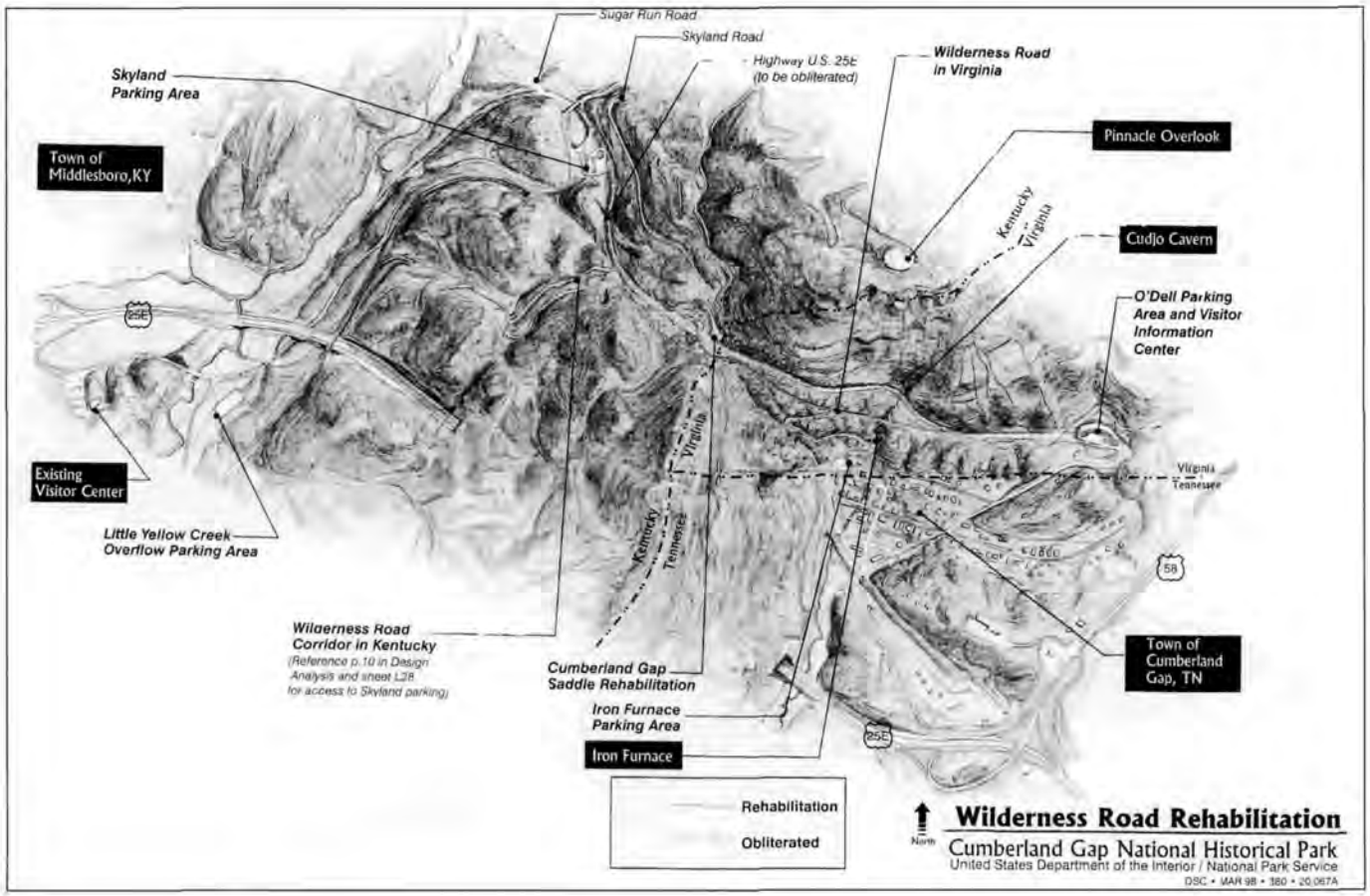
With the opening of the tunnels to traffic in October 1996, the dangerous section of U.S. Highway 25E could be closed to the more than 18,000 vehicles that daily passed through the historic park. Today, the tunnels carry more than 11 million vehicles annually, or approximately 32,000 cars per day.

Restoration and Mitigation

It is noteworthy that the Final Environmental Statement on the project cited the rehabilitation of the Gap and Wilderness Road as the mitigation for the construction of the tunnels. This daunting mitigation project – crucial to fulfilling Congress' intent in creating the park – became a key component of the site's development concept plan.

In the early 1990s, as construction proceeded on the tunnels, extensive research began to identify road routes and topographical land forms altered or destroyed during the construction of the Object Lesson Road and later improvements to U.S. Highway 25E. This information was used to complete the mitigation plan and prepare the design for the rehabilitation of the Gap's historic landscape.

Historical documentation regarding the significance and location of the Gap and the Wilderness Road was available from a study prepared by National Park Service historian Jere L. Krakow in 1987.[2] In addition, Michael F. Hart, a visual information specialist (now retired) with the National Park Service's Denver Service Center, was challenged with rediscovering the alignment of the Wilderness Road and other significant early trails as well as the approximate "historic" contours of the topography of the "saddle of the Gap."



Hart's methodology combined with Krakow's work were used to prepare construction documents advertised to potential contractors in the winter of 2001. A rare combination of artistic skills, historical research, and knowledge of photography, surveying, and cartography created documents that guided contractors to successfully rehabilitating the historic landscape at the Gap and the adjacent corridor that had been the highway.

The methodology involved a combination of fieldwork and research using, among other elements, an 1833 survey, an 1862 map, re-creation of historic photographs by locating original camera positions, surveying from reference points, aerial photographs, and extensive field study along the mountainside.

In verifying the original landscape, specific coordinates were determined for known points such as Cudjo Cave, Gap Creek, and the Iron Furnace, resulting in delineation of key resources throughout the historic district. The National Park Service and the Federal Highway Administration used Auto-Cad to merge four kinds of digital survey data into a single, composite survey database creating a three-dimensional view of the historic landforms of the Gap and surrounding mountainside. The resulting grading plan enabled engineers and landscape architects to calculate the quantities of cut and fill materials needed to produce the historic features that had been lost to modern roadbuilding.

Prior to the rehabilitation project, the Gap was estimated to be 32 feet lower than it was 223 years ago. An estimated 215,000 cubic yards of fill dirt, much of which had been retained during tunnel construction, was used to return the Gap to contours that probably existed in 1780.

In July 2001, a contract was awarded to Estes Brothers Construction Company of Jonesville, VA, to rehabilitate the area. The first order of business included removing approximately 13,000 tons of asphalt. This was followed by demolishing the former roadway, including uncovering areas that had previously been filled with dirt to produce a reasonable grade as well as filling in areas that had been cut through with heavy equipment to produce the former highway.

Following the recontouring of the landscape, completed just 9 months after the contract was awarded, the area around the approximately 10-foot-wide wilderness trace was planted with native grasses, shrubs, and trees. This was made possible through a multiyear agreement between the U.S. Department of Agriculture, Natural Resource Conservation Service, and the National Park Service. This collaboration included harvesting seeds from the park and propagating and replanting thousands of native plants and trees.

In the late spring of 2002, college students from nearby Lincoln Memorial University planted 20,000 trees in one weekend, transforming barren landscape into a virtual forest overnight.

The final phase of this incredible project is scheduled for fiscal year 2003. This will include an outdoor interpretive center with a ranger station for cave tours, an interpretive pavilion and exhibits, and restrooms.

The New Wilderness Road

Today the topography of the Gap is starting to look more like it did in 1750 when Dr. Thomas Walker, surveyor for the Loyal Land Company, explored the area and wrote in his journal:

> On the north side of the gap is a large spring, which falls very fast, and just above the spring is a small entrance to a large Cave, which the spring runs through, and there is a constant Stream of cool air issuing out.

Walker is credited with naming the Gap in honor of William, Duke of Cumberland, brother of King George II.

This mountain pass has been known by many names over the years, some associated with royalty, some with tragedy. But no name is more evocative of its role in American history than Wilderness Road. Today's vistors, like the travellers who journeyed this way 225 years ago, can step back in time and once again share a path with Daniel Boone.

Notes

1 Public Law 93-87.

2 Jere Krakow is currently general superintendent of the National Trails System program in the National Park Service's Intermountain Region.

Mark Woods is superintendent of Cumberland Gap National Historical Park.

Amy B. Vanderbilt

On the Road Again
Glacier National Park's Red Buses

In the early 20th century, most visitors to national parks arrived by train and then toured the parks on horseback or by stagecoach. As motor vehicles became more common, more visitors starting arriving in their own cars and buses replaced horses as the means to explore the parks. The style and type of these buses varied from park to park, and by the mid-1930s the National Park Service decided to standardize park-touring buses.

Specifications were developed, and buses from all major manufacturers were evaluated. The winning proposal came from the White Motor Company of Cleveland, OH. Its buses were designed by Count Alexis de Sakhoffsky, a famous industrial stylist of the time, and featured a rollback canvas convertible top. Each row of seats had its own door, and every window rolled down. Several hundred of the buses were built, with each park making minor changes in configuration and adopting its own color scheme. Yellowstone's buses were yellow, of course. The fleet for Glacier was painted a brilliant red and black. The buses served the parks (Bryce Canyon, Glacier, Grand Canyon, Mt. Rainer, Yellowstone, Yosemite, and Zion) well but began to disappear after World War II as visitors increasingly preferred to tour in their own cars. The buses faded from all the national parks, except Glacier.

Red Bus Number 99, the 17-passenger buses feature removable canvas tops that can be rolled back for sightseeing across the Continental Divide. Photo courtesy Ford Motor Company.

The "Reds" and the Sun Road

The buses survived in Glacier because of the Going-to-the-Sun Road (Sun Road). Prior to the opening of the 50-mile trans-Continental Divide road in 1933, the only access to Glacier's pristine high country was by horseback or on foot. The Sun Road was acclaimed for its beautiful scenery and daring engineering, but many people feared the breathtaking drop along the road and found it hard to sightsee while driving. The Red Buses, or "Reds", were introduced in 1936-37 and quickly became the most popular way to experience the Sun Road. Everyone rode in them — including Clark Gable, Carol Lombard, William Randolph Hearst, and, more recently, then-Vice President George H. Bush, the Queen of the Netherlands, and Robin Williams. The Reds provided a memorable experience to every visitor and a reminder of when adventure travel was conducted with style and grace.

The Reds were also called "jammer buses," a reference to the days when they had standard transmissions and the drivers could be heard "jamming" the gears as they double-clutched along the precipitous Sun Road. Visitors loved the stylish buses and their drivers, who were affectionately nicknamed "Gear Jammers." Before long, it was hard to tell which was more popular, the Sun Road, the Reds, or the Gear Jammers!

In the summer of 1999, a combination of old age, metal fatigue, safety issues, and liability concerns caused the Reds to be pulled from service, replaced by contemporary 15-passenger vans. Glacier's 33 buses were believed to be the oldest sightseeing fleet in existence.[1] They are also believed to hold the record for the longest continuous service of any bus fleet in the U.S., and quite possibly the world. The oldest of the Reds had been on the road for more than 64 years.

A heavy snowstorm moved the June 8, 2002, Red Bus "welcome home" celebration inside historic Glacier Park Lodge. Photo courtesy Glacier National Park.

That same year, Glacier National Park completed a General Management Plan (GMP). Initially, public comments about long-term park management emphasized a desire for less development within the park. Midway through the 5-year planning process, a stronger theme surfaced: "Keep Glacier National Park the way it is. Don't change it." More than 7,000 public comments were received; the majority loved the natural beauty and tranquility of Glacier and also expressed strong attachments to the park's human and cultural history, including the Red Buses. Fortunately for the Reds, park management was firmly committed to having the bus experience retained. Accordingly, the GMP states, "The red bus touring experience will be continued as part of the heritage opportunities for visitors to enjoy at Glacier National Park."

The Red Bus Team

In October 1999, the park created the Red Bus Team. Made up of a small group of park employees and representatives from park concessioner Glacier Park, Inc. (GPI), the owner of the Reds, the team was charged with not only finding a way to return the Red Bus experience to Glacier, but also doing so in an economically feasible manner.

The team faced myriad complicated issues, including wheel-chair accessibility, retention of existing body components and design elements while addressing contemporary safety standards, and variations in size and components from bus to bus. Helping the team in the search for solutions were volunteer advisors like Barbara Pahl, Director of the National Trust for Historic Preservation's Mountain/Plains Office; Bruce Austin, an aficionado of the White Bus Company sedans, and Don Durkee, Assistant Chief Counsel for the Federal Transit Administration (FTA). Equally important were collaborators from The Glacier Fund, Glacier National Park Foundation, the Propane Education and Research Council, Clean FuelUSA, Amerigas, the Montana Department of Transportation, and the Montana Department of Environmental Quality.

On top of the design, renovation, and mechanical issues, the team also had considerable financial challenges. The cost estimates were substantial—beyond what GPI could tackle on its own. The team searched for possible funding sources, but could not identify viable private alternatives. Furthermore, there appeared to be no public funding for a fleet of buses in private ownership, even if they were potentially the oldest, longest-running fleet of tour buses in the world. It began to look like the old buses might be relegated to museums, private collections, or junkyards.

Finding Ford

In 1999-2000, the National Park Service hosted four regional workshops for park managers and partners on alternative transportation technology and opportunities for developing partnerships with other agencies and the private sector. Representatives from the Ford Motor Company participated in the workshops and heard about the transportation issues – including the Red Buses – at Glacier. Ford visited the park in July 2000 to get a first-hand look at the problem and to talk to park managers, GPI, and alter-

Visitors to Glacier National Park ride Red Bus Number 107 (August 15, 1938) past the remnants of the annual 50- to 80-foot-deep "Big Drift" east of Logan Pass (elev. 6,646 feet) that is one of the final obstacles to opening the Going-to-the-Sun Road each spring. Photo courtesy Bayard Lawes, Transportation Design & Manufacturing.

The Red Buses went through a complete refurbishment that included the installation of clean burning alternative fuel technology. Photo courtesy Ford Motor Company.

native transportation consultants from FTA. The visit was a turning point. The Red Bus Team had a new partner – Ford Motor Company.

Later in 2000, Ford became part of the National Park Foundation's "Proud Partner of America's National Parks" program,[2] and the Red Buses became the company's first Proud Partner project.

Red Bus "Number 98" went east to Inkster, MI, to begin an extensive engineering and design review to determine the feasibility of a chassis and engine retrofit for the entire fleet and how it could be accomplished while still preserving the historic character of the buses. A review like this had never been attempted before. With each new discovery came new challenges, often delays and uncertainty, but ultimately solutions.

The work on Number 98 was completed in May 2001. The newly-renovated Red Bus was unveiled at two public ceremonies in June 2001 — one in Washington, DC, presided over by Secretary of the Interior Gayle Norton, and the other in Glacier National Park, where 300 guests were regaled by the reminisces of 86-year-old Dr. Robert Wise, one of the original drivers of Number 98 in 1936.

Based on what was learned from the work on the first bus, a rehabilitation and refurbishment plan was devised for the entire fleet that included:

- a new Ford E-450 chassis stretched to original White bus wheel base
- an all-new 5.4L V8 clean-burning, bi-fuel powertrain using LPG (propane)
- a space-age (aerospace) aluminum honeycomb floor to increase strength and reduce weight
- a new-concept isolation "sled" to insulate body from chassis noise and vibration
- ergonomic seats for the driver and passengers
- lighter-weight rear door and body reinforcement
- upgraded glass and lighting
- an upgraded instrument panel
- a heater
- a body painted with environmentally friendly paint

The switch to the new clean burning fuel system reduced emissions by 93 percent, qualifying the vehicles for a ULEV (ultra low emissions vehicle) rating. To support the buses' operation, Ford, in cooperation with Clean Fuels USA, installed two propane-refueling stations near the park.

The return of the renovated Reds to Glacier was celebrated in a snowstorm in June 2002. All of the buses will finally be home in December 2002. When they are, both the Red Bus experience and the buses themselves will belong to the American people. To begin the renovation process, GPI donated the buses to the National Park Foundation, which will transfer ownership to the National Park Service when all the buses have returned to the park. GPI will continue to operate the buses through December 31, 2005, the end of its contract with the park.

Glacier National Park Interim Superintendent Pete Hart joined more than 500 guests, partners, and former "Gear Jammers" in celebrating the return of the Reds. Photo courtesy Ford Motor Company.

Snow forced the celebration inside, but after their lunchtime performance the Tropical Montana Marimba Ensemble got a first hand look at one refurbished Red Bus. Photo courtesy Ford Motor Company.

The Red Bus project took more than 2 years and a team of over 200 experts from over six different organizations to make the dream of returning the historic Red Buses a reality. Ford completely renovated the Red Buses using new technology and its extensive expertise in alternative fuels. While preserving the exterior of the buses along with their historic charm, Ford used alternative fuel technologies to change the engine and drive-train, making them cleaner and quieter than the originals. Ford partnered with Transportation Design and Manufacturing (TDM), and more than 125 TDM employees in Livonia, MI, worked on the project.

The success of the Red Bus partnership relied on the dedication of each partner to a single goal — the return of the Red Bus experience to Glacier National Park. This common goal kept the partners focused through changes in deadlines, scope, vision, and key players. That being said, without the environmental leadership, vision, and generosity of Ford Motor Company, it is unlikely that the Red Bus fleet would have returned to offer visitors decades of unparalleled experiences on the Going-to-the-Sun Road.

The Red Bus project took a piece of Glacier's history and made it a part of our future. The incorporation of clean-burning, alternative fuel technology in the renovated buses makes them not only a tangible connection to preserving yesterday, but also a real commitment to protecting tomorrow. Glacier National Park is continuing this commitment and, along with the park's neighboring stakeholders and communities, has begun the process of meeting the criteria to become a U.S. Department of Energy "Clean City"[3] neighborhood. Yellowstone National Park recently received this designation after nearly 5 years of work.

Across the Nation, the National Park Service is working with like-minded partners to explore transportation needs not only in national parks but also in the regions adjacent to parks. These efforts address the use of new technologies, fuel efficiencies, and low-emission tour vehicles. They are also looking at the possibility of wrapping these new technologies in a "retro" package, vehicles that resemble the Reds and the other old national park tour buses, yet meet all contemporary regulations, mandates, and environmental leadership goals.

The Reds have returned to Glacier National Park. The idea of the Reds can touch all national parks.

Heading into Two Medicine Valley, the view with the top down. Photo courtesy Ford Motor Company.

Notes

1 According to research conducted by the National Trust for Historic Preservation.

2 The National Park Foundation was chartered by Congress in 1967 to raise private support for National Parks and to build a broad community of people who care about their parks. The Proud Partner Program was created to enhance the National Park experience and increase awareness of how the parks reflect the heritage of all Americans.

3 The Clean Cities program enhances the Nation's energy security and air quality by supporting public and private partnerships that deploy clean-burning alternative fuel vehicles and a build their associated fueling infrastructure.

Amy B. Vanderbilt, a 22-year veteran of the National Park Service, is the public affairs specialist at Glacier National Park, MT. She served as the Red Bus Team leader.

Judith Collins and Al Nash

Preserving Yesterday's View of Tomorrow

The Chicago World's Fair Houses

For almost 70 years, wind, sand, and surf have battered five houses transplanted along the Lake Michigan shoreline of Northwest Indiana. The houses were built for the 1933 Chicago World's Fair to celebrate a "Century of Progress" and demonstrate modern architectural design, experimental materials, and new technologies such as central air conditioning and dishwashers. Organized around the "theme of science and its role in industrial development,"[1] this World's Fair was planned in times of prosperity but opened in the midst of the Great Depression.

The exhibit homes within the Home and Industrial Arts Group "utilized new techniques of design, construction and prefabrication in an attempt to bring the out-of-date housing industry into line with more efficient manufacturing practices such as those used by the auto industry."[2] A period publication explained that:

> Although all the houses are moderne in architecture and have for their interior motif the practical demonstration of the latest trends in home furnishing and decoration, lighting, labor saving devices, and combination heating and air-cooling plants, each is as different from its neighbor as the material used in constructing its outside walls."[3]

In fact, they were much more than model houses. They were visions of what some designers and builders hoped Americans would call home in the years to come – visions of a future that has yet to come.

The Move to Beverly Shores

After the close of the Fair in the fall of 1934, five of the houses were sold to Chicago real estate developer Robert Bartlett. He brought them by barge and truck to the Indiana dunes, hoping that these and 10 other structures relocated from the World's Fair would entice buyers to his resort community of Beverly Shores, IN.[4]

Bartlett had taken over the development of the community from his brother the previous year and began aggressively marketing Beverly Shores real estate in the Depression-battered market.[5] In the ethnic neighborhoods of Chicago, he promoted the resort with its theatre, restaurant, and golf course as part of the American dream. Chauffeur-driven Packards picked up dream-seekers at the Beverly Shores railroad station.

Bartlett intended to furnish the five World's Fair houses, open them to the public, and sell them starting in October 1935. However, his dreams were never fulfilled. By 1938, only one house — the House of Tomorrow — had been sold. Seasonal renters occupied two houses, and two were vacant. Prospects for the houses and for the development became even bleaker with the approach and outbreak of World War II. By 1946, Bartlett had sold off his interests in the resort; and in 1947 the community incorporated as a municipality.

Park + Partners = Preservation

In 1966, Congress created the Indiana Dunes National Lakeshore. The most heavily developed section of Beverly Shores was excluded

The House of Tomorrow at the 1933 Chicago World's Fair. Entrance to the airplane hangar is at the bottom right.

from its boundaries. However, all 5 miles of lakefront property came into the park, including the World's Fair houses. Under the Reservation of Use and Occupancy program at Indiana Dunes National Lakeshore, an owner who sells a property to the park can continue to live in the house for a fixed term or life estate. Acquisition of the World's Fair houses began in the 1970s; the owners of each of the houses reserved occupancy for up to 25 years.

"These unique homes were never designed to exist after the World's Fair closed," noted park Superintendent Dale Engquist. "Acquiring them after decades of residential use presented us with an expensive maintenance challenge right from the onset."

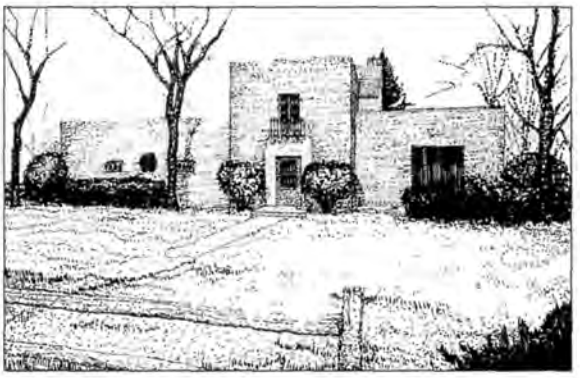
The homes were listed on the National Register of Historic Places in 1986. In 1993, the Historic Landmarks Foundation of Indiana, a statewide nonprofit preservation organization, included the Century of Progress houses on their "Ten Most Endangered Sites in Indiana" list.

The national lakeshore and the Historic Landmarks Foundation entered into a formal agreement in 1996 to protect and maintain the houses through a long-term residential leasing program. Under the agreement, the Historic Landmarks Foundation agreed to recruit sublessees to rehabilitate the houses following "The Secretary of the Interior's Standards for the Treatment of Historic Properties" and the guidelines for rehabilitation.

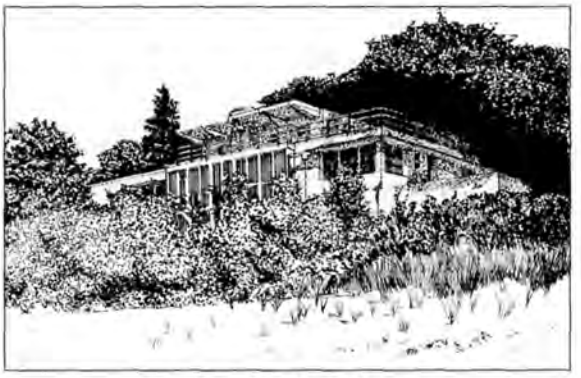
The leasing program has been very successful in bringing attention to the condition of the buildings. Hundreds of people have contacted the Historic Landmarks Foundation about preserving the houses. Multiple stumbling blocks—including the high cost of the restoration projects, the lack of financial incentives, and the fact that ownership of the property remains with the National Park Service—have made attracting sublessees a lengthy process. "The biggest challenge, and the most important piece," according to Todd Zeiger, the Historic Landmark Foundation's northern regional director and Century of Progress program manger, "is matching the personality of the house with the personality and ability of the interested individuals."

House of Tomorrow

The World's Fair house with the most distinct personality is the House of Tomorrow. Bartlett paid only $2,500 for the 12-sided, 3-story structure. Perched atop a dune ridge, it provides breathtaking views of Lake Michigan.



Wieboldt-Rostone House
Architect: *Walter Scholer – Lafayette, IN*
Design Goals: *Structural steel frame covered by panels made from experimental material*
Status: *Rehabilitation begun 2002*



Florida Tropical House
Architect: *Robert Law Weed – Miami, FL*
Design Goals: *Blend indoor and outdoor living and entertaining environments*
Status: *Rehabilitation begun 1997*

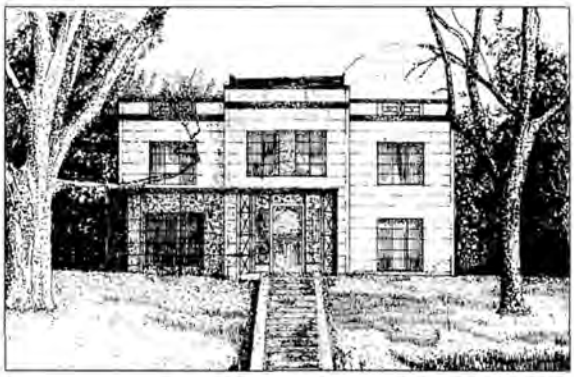
House of Tomorrow kitchen, 1994. Jack E. Boucher, NPS photographer.

The steel and concrete structural system of the house was originally assembled at the Fair site in only 48 hours. Its most prominent feature is the floor to ceiling "curtain wall" of glass used to enclose the second and third floors. Chicago architect George Fred Keck defied mechanical engineers who said that due to the expansive use of glass the house couldn't be heated.[6] Just the opposite occurred. The predicted amount of winter heat loss was far surpassed by the actual solar heat gain, resulting in the failure of the home's revolutionary air-conditioning system in the summer.[7] When Bartlett moved the house to Beverly Shores, he replaced the glass walls with operable windows to allow for proper air circulation. Keck later became a leader in developing passive solar heating through research and residential design.

Keck's intent for the House of Tomorrow ". . . was not to give a specific form to his building, but rather to find a solution to the many and varied new requirements of a residence in a simple and direct manner."[8] He based the design on the prefabricated structural components and air-conditioning systems that were available at the time. The house offered a kitchen with state-of-the-art gas appliances "calculated to bring joy and satisfaction to the housewife" and copper-clad exterior walls surrounding the first floor service area. In addition to a garage, it boasted an airplane hanger since futurists in 1933 assumed that every family would have both an automobile and an airplane.

"My desire is to restore the house to the 1933 look of the Fair, when it was much more modern," said Susan Schanlaber, the new lessee and self-styled caretaker of Keck's greatest creation.[9]

Schanlaber is well suited to the task. She grew up in, and was inspired by, a Keck-designed



Armco-Ferro-Mayflower House
Architect: *Robert Smith, Jr. – Cleveland, OH*
Design Goals: *Use of porcelain enameled steel panels to mass produce affordable housing*
Status: *Under Reservation of Occupancy and Use until 2005*

House of Tomorrow
Architect: *George Fred Keck – Chicago, IL*
Design Goals: *Innovative structural system, glass walls, showcase for use of modern materials*
Status: *Rehabilitation begun 2001*

Cypress Log Cabin
Architect: *Murray D. Heatherington – Chicago, IL*
Design Goals: *Display unique qualities and many uses of cypress as a building material.*
Status: *Available for lease and rehabilitation*

Wieboldt-Rostone House from the dining room looking through the wall at the kitchen on the right and service hall on the left, 2002. Photo by Ross Gambril.

home in Aurora, IL. The founder, president, and chief operating officer of the Chicago based Landmark Group of Companies, Schanlaber has extensive experience in acquiring, renovating, and managing historic properties. This past summer, President George W. Bush appointed her to the Advisory Council on Historic Preservation.

The House of Tomorrow was vacated in 1998. Schanlaber began rehabilitation work 3 years later. Carpeting, wall coverings, and other nonhistoric and very deteriorated finish materials have been removed from the interior. Preparations for exterior repairs began by removing two nonhistoric additions—a carport and a second floor screened enclosure.

"It's a seminal piece of architecture, and it's important to our history and architectural development," noted Schanlaber. "On a broad scale, the house needs to be preserved and perpetuated for future generations to see . . . . Of course, a side benefit is that my family will enjoy it."[10]

An Ironworker's Dream

The most visible rehabilitation effort is also the most recent to get underway. The gregarious Ross Gambril has thrown himself into work on a project he freely admits has become "an obsession."

Gambril's father toured the housing exhibit at the World's Fair, and years later drove his son past the distinctive homes that had been moved to Beverly Shores. A magazine article prompted the son to call the Historic Landmarks Foundation and to obtain a tour of the Wieboldt-Rostone House. "Until I walked through, I had no clue it was structural steel and precast slabs," the experienced ironworker said. "Fifteen minutes into the house, I said 'I'll take it!' It was perfect. I knew what to do."

The building, designed by architect Walter Scholer of Lafayette, IN, was originally clad in an experimental material called Rostone. Its creators boasted that the shale, limestone, and alkali slabs could be produced in a variety of colors and forms to exact dimensions.[11] Rostone did not prove to be durable, and in 1950 it was covered by another synthetic finish—concrete stucco called Permastone.

Gambril is considering pulverizing some of the remaining deteriorated Rostone panels and mixing them with an elasticized binder to produce longer lasting panels. His exhaustive research on the structure has turned up the original formula for Rostone as well as the source of the shale and limestone used to make the original panels. With that information new panels could be manufactured to match the originals.

The deteriorated interior finish materials are being removed so Gambril can inspect the structural steel system and the wood framed walls to determine the scope of work needed to return the home to its 1930s splendor. When prompted for a forecast completion date, Gambril boasted, "The first party is scheduled for Memorial Day Weekend 2005."

The three other Century of Progress homes still exist; all five are arranged in the same relationship to Lake Michigan as they had been placed at the Fair. The Bill Beatty family of Munster, IN, has been diligently bringing life back to the bright pink Florida Tropical House. Lessees are still being sought for the Cypress Log Cabin, while the enameled steel Armco-Ferro-

The Great Hall of the Cypress Log Cabin, 1994. Jack E. Boucher, NPS photographer.

Mayflower House is occupied under a Reservation of Use and Occupancy that expires in 2005.

The national lakeshore and the Historic Landmarks Foundation are committed to the long-term preservation of the Century of Progress homes. The partners believe the rehabilitation of the homes through the leasing program is the only feasible way of providing for long-term protection. "This is an excellent way to save properties the National Park Service owns," said Zeiger.

Notes

1 Maria Ali, *The Century of Progress Documentation Project* (Washington, DC: Historic American Buildings Survey, National Park Service, Department of the Interior, 1994).

2 Ibid.

3 *Chicago and the World's Fair 1933* (Chicago, IL: F. Husan Publishing Company, Inc., 1933).

4 Janice Slupski, *17 West Service Avenue: An Illustration of Dunes Area Recreational Development* (Porter, IN: Indiana Dunes National Lakeshore, National Park Service, Department of the Interior, 1997).

5 Ibid.

6 Charles Storch, "2 brothers here designing solar buildings 40 years," *Chicago Tribune* (November 4, 1977).

7 Ali, op. cit.

8 B.R. Graham, *House of Tomorrow, America's First Glass House* (1933).

9 Alicia Zartman, "House of Tomorrow Looks to Future," *Indiana Preservationist #5* (September/October 2002): 4-5

10 Ibid.

11 Ali, op. cit.

Bibliography

Glass As An Architectural Medium in 9 Small Modern Houses At A Century of Progress 1933-1934, n.d.

Boyce, Robert. *Keck & Keck.* Princeton, NJ: Architectural Press, n.d.

Folsom, Joseph C. "How to Enjoy This Week at the Fair Week Ending Sept. 30." *Official World's Fair Weekly* (1933).

Jandl, H. Ward, Burns, John A., and Auer, Michael J. *Yesterday's Houses of Tomorrow, Innovative American Homes 1850 to 1950.* Washington, DC: Preservation Press, 1991.

Judith Collins is a historical architect with the National Park Service at Indiana Dunes National Lakeshore.

Al Nash is a public affairs specialist with the National Park Service at Indiana Dunes National Lakeshore, detailed to the Washington office.

Illustration credit: Drawings on pages 28-29 by Miles B. Battle, HABS, NPS, 1994. The HABS documentation (measured drawings, photographs, and written history) of these World's Fair houses can be found on the National Park Service Web site at <www.cr.nps.gov/habshaer/>.

Beverly Shores Railroad Station, built in the Spanish mission style in 1929 boasts a 25-foot-long neon sign, 1994. Jack E. Boucher, NPS photographer.

Mariangela F. Pfister

The Building Doctor Is In

Ailing buildings in Ohio have a "doctor" on call. For 25 years, the Ohio Historic Preservation Office (OHPO) of the Ohio Historical Society has, in partnership with local communities, sponsored Building Doctor clinics. This two-part outreach program is designed to help owners of older buildings learn and understand the basics of good preservation and rehabilitation.

Each clinic starts with an evening presentation by the Building Doctors, covering everything from identifying significant features of old buildings to the basics of "The Secretary of the Interior's Standards for the Treatment of Historic Properties" to maintenance issues unique to older structures. A question and answer period at the end addresses participants' general rehabilitation or maintenance questions.

House Calls

The following day, the Doctors make house calls. Any property that is at least 50 years old is eligible for a visit from a Building Doctor. On site, property owners get the Doctors' assistance with all manner of ailments, including leaking roofs, drafty windows, peeling paint, rotted wood, deteriorated masonry, and wet basements. Doctors may suggest that the property owner consult a specialist (for example, a structural engineer or an architect) about certain problems. Doctors may also leave behind copies of the National Park Service's Preservation Briefs series to reinforce treatment issues and options covered either in the presentation or onsite.

The Building Doctors all have master's degrees in history, historic preservation, architectural history, or planning. Before Building Doctors are permitted to conduct site visits independently they must have one year's experience in the field working on historic rehabilitation projects. All new Doctors shadow an experienced Doctor for a season.

The evening clinics and house calls are open to the public and free so that everyone, regardless of means, has access to the program. The Preservation Office does charge community cosponsors of the Building Doctor clinics a fee of $275 to cover some program costs.

Eight Building Doctor clinics are held between April and October each year, but demand for clinics always outweighs availability. Cosponsoring communities are selected based on factors including location, preservation needs, demonstrated ability to host a clinic, time since the last visit, and time spent on the waiting list. OHPO tries to balance the Building Doctor schedule so that a clinic is held in most parts of the State every season.

Once Building Doctor communities have been selected, work begins to ensure a successful clinic. Fundamental to this success is a contract detailing OHPO and cosponsor responsibilities. OHPO provides and distributes brochures publicizing the event, works with the media, accepts registrations, provides program booklets and information folders distributed at the seminars, and provides two Building Doctors per clinic to make the presentation and conduct the site visits. The cosponsor assists with local publicity,

The Building Doctor answers questions about the treatment of windows and other issues that challenge owners of older properties. Photo courtesy the Ohio Historic Preservation Office.

arranges the seminar location, provides overnight accommodations for the Building Doctors, and provides local guides to accompany them on the site visits.

25th Season

The first Building Doctor program was held in Portsmouth, OH, in 1979 and was modeled after a similar program sponsored at the time by the Midwest Office of the National Trust for Historic Preservation. Its purpose then, as today, is to reach property owners of historic buildings who might not otherwise be served by the OHPO through traditional programs such as Federal grants, tax credits, or the National Register of Historic Places program. Through the Building Doctor clinics, OHPO raises public awareness about historic buildings and their care and maintenance. The Building Doctor program is arguably the most successful program OHPO offers to provide basic information on the care of historic buildings.

The Building Doctor program celebrates its 25th season in 2003, and OHPO continues to strive to improve the program with improved media presentations, improved marketing materials, and improved means for gauging customer satisfaction.

Information gathered from the public assists OHPO in refining the program. As a result of participant comments, OHPO created a wood conservation seminar and a Building Doctor program for commercial properties. This feedback also highlighted topics most important to clinic participants. In response, OHPO created technical fact sheets – FastFacts – that offer property owners a brief overview of common issues affecting older buildings.

Program Benefits

Through the Building Doctor program, OHPO spreads the message of good preservation to a large and diverse audience, giving building owners the basic information that they need to make informed decisions. In addition, the clinics get technical information into the hands of the folks directly responsible for rehabilitation projects. An added benefit is the opportunity for OHPO professional staff to work in the field, which helps the staff increase their knowledge and understanding of local issues.

Ohio's communities are also benefiting. Building Doctor cosponsors from the past five seasons were recently surveyed and with 75 percent responding, every community indicated that it would readily cosponsor another Building Doctor clinic. In addition, many communities stated that as a result of the clinics, preservation libraries were created and preservation review boards and downtown revitalization committees were started or given a boost. Cosponsors reported that the program reinforced the message that existing local preservation organizations were trying to get out about sensitive rehabilitation. Perhaps the most important benefit of the Building Doctor program is that it helps engage the citizens of Ohio in historic preservation in a way that is both useful and enjoyable.

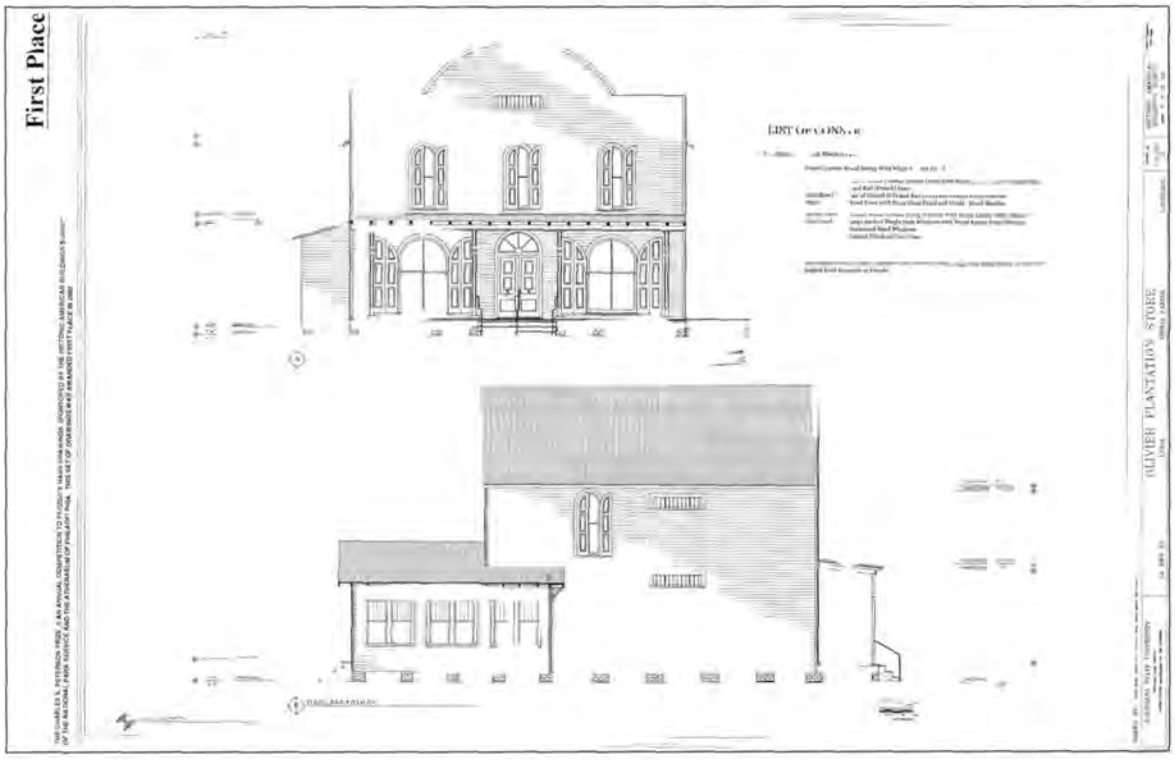
Mariangela F. Pfister is the technical preservation services manager in the Ohio Historic Preservation Office, and the manager of the Building Doctor program.

Although the name "Building Doctor," the Building Doctor logo, and the title of the technical briefs, "FastFacts," are all copyrighted, the Ohio Historic Preservation Office is happy to share information on how to start a Building Doctor-style program in other communities. Contact program manager Mariangela F. Pfister at mpfister@ohiohistory.org. To receive a 2003 Building Doctor brochure, call the Ohio Historic Preservation Office at 614-298-2000.

Endnotes

The 2002 **Peterson Prize**, a competition for architectural measured drawings, went to a team of 19 students from the Department of Interior Design, College of Art and Design, of **Louisiana State University.** The students produced CAD-plotted drawings of the National Register of Historic Places-listed Olivier Plantation Store (1908) in Lydia, Iberia Parish, LA (see an example of the students' work below). Second place went to **Kent State University** School of Architecture and Environmental Design for drawings of the powerhouse (1914) at Fair Lane, Henry Ford's estate in Dearborn, MI, a National Historic Landmark. Third place went to the **University of Texas at Austin** School of Architecture for drawings of the Point Bolivar Lighthouse (1872) in Galveston County, TX. Fourth place went to the **University of Illinois** School of Architecture for drawings of three University-owned round barns (1908-1912). An honorable mention went to the **University of Kansas** School of Architecture and Design for drawings of the Beaumont St. Louis & San Francisco Railroad Water Tank (1885). Fourteen entries from 13 colleges were submitted for judging in this annual contest sponsored by the National Park Service's Historic American Buildings Survey (HABS), The American Institute of Architects, and The Athenaeum of Philadelphia. The prize was created 20 years ago to honor Charles E. Peterson, FAIA, the founder of HABS. This prize also commends the work of the student documentation teams that are the heart of HABS' ongoing work of raising awareness about historic buildings while adding to the permanent HABS collection of measured drawings at the Library of Congress. The deadline for the 2003 competition is June 30. Visit the HABS Web site at <www.cr.nps.gov/habshaer/joco/pete> for more information.

Bryan Mitchell has been named to head the Heritage Preservation Services (HPS) program, National Center for Cultural Resources, National Park Service. HPS includes the American Battlefields Protection Program, Federal Historic Preservation Tax Incentives, the Historic Preservation Fund, Technical Preservation Services, and the Tribal Preservation Program. Mitchell has been with the National Park Service for nearly 9 years, the last 5 years as head of the Preservation Initiatives branch of HPS. Prior to coming to the National Park Service, Bryan was the State Historic Preservation Officer (SHPO) or Deputy SHPO in Virginia from 1977 to 1994.

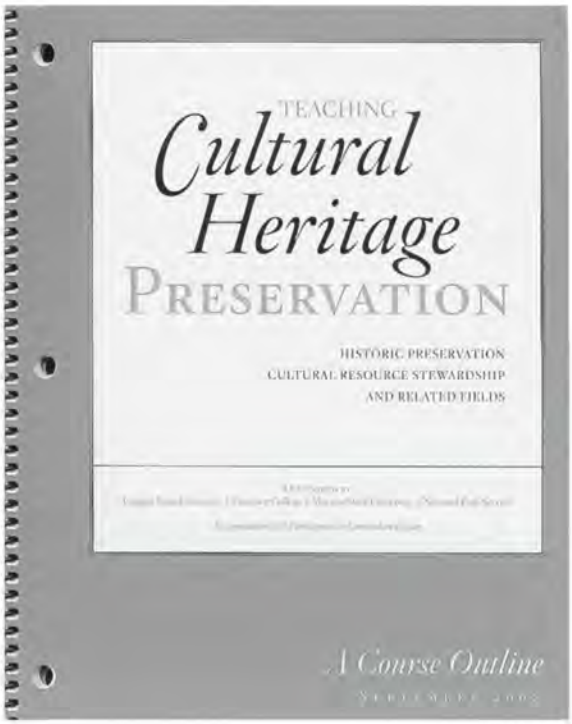


Endnotes

A new edition of "**Federal Historic Preservation Laws**" is now available from the National Park Service's National Center for Cultural Resources. The first update (with changes through December 2001) since 1993, the volume includes 23 Federal laws and portions of laws that pertain to the preservation of the Nation's cultural heritage. Arranged chronologically, the laws trace the evolution of historic preservation philosophy including the creation of the National Park Service as the lead Federal preservation agency in 1916, the Historic Sites Act of 1935, and the National Historic Preservation Act of 1966 and its major amendments in 1980 and 1992. These laws helped create a national historic preservation partnership that includes not only Federal agencies, but also Tribal Preservation Offices, State Historic Preservation Offices, Certified Local Governments, and private organizations like the National Trust for Historic Preservation. To request a copy, send an email to crwebteam@nps.gov or write National Park Service, National Center for Cultural Resources, 1849 C Street NW (2251), Washington, DC 20240-0001.

A multi-year project at Virgin Islands National Park has won park archeologist and 20-year National Park Service veteran **Ken Wild** the **Cotter Award**. Started in 1998, the project is the first major scientific excavation in the U.S. Virgin Islands related to native people. The project focused on the precontact Taino culture (A.D. 900-1500) and an early 17th-century plantation village with a slave cemetery at Cinnamon Bay. In addition to National Park Service funds, the Friends of the Virgin Islands National Park raised substantial contributions for the project that also drew hundreds of volunteers. The award is named for Dr. John Cotter, a longtime National Park Service archeologist.

To encourage minority colleges and universities to develop undergraduate classes focusing on the preservation of minority cultural heritage, the National Park Service has published **Teaching Cultural Heritage Preservation.** The course outline was produced in partnership with three Maryland colleges — Coppin State University, Goucher College, and Morgan State University — and members of the Curriculum Forum. The outline is available online at <www.cr.nps.gov/crdi>, click "Colleges and Universities."



Endnotes

The team responsible for raising the **H.L. Hunley** received the National Trust for Historic Preservation and the Advisory Council on Historic Preservation's first **Award for Federal Partnerships in Historic Preservation**. The team included the Department of Defense, U.S. Navy, U.S. Army Corps of Engineers, National Park Service, U.S. Coast Guard, South Carolina Hunley Commission, South Carolina Institute of Archeaology and Anthropology, South Carolina Department of Archives and History, South Carolina Department of Natural Resources, South Carolina Educational Television, Oceaneering International, National Underwater and Marine Agency, Titan Maritime LLC, National Geographic, and the Friends of the Hunley, Inc.

The National Park Service has moved! As of September 2002, many of the Washington, DC, offices of the National Park Service were consolidated in a new location. The move was necessitated by an expected 10-year-long renovation of the Main Interior Building. Only the offices of the National Park Service Directorate will remain in the Main Interior Building during construction. More than 600 National Park Service employees can now be found in the new building at 1201 Eye Street NW, Washington, DC 20005. That address should be used for commercial mail deliveries; address all other mail to 1849 C Street NW, Washington, DC 20240. An online directory of new phone numbers can be accessed at <http://data2.itc.nps.gov/npsdirectory/>.

CORRECTION: The article "In-Tocks-icated – the Tocks Island Dam Project" (CRM Volume 25, Number 3) mistakenly stated that the Delaware Valley Conservation Association supported the construction of the Tocks Island Dam. This is an error. The association consistently opposed the dam. The author and CRM regret the error.

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