NATIONAL ENDOWMENT
FOR THE HUMANITIES

SAMPLE APPLICATION NARRATIVE

Stabilizing Humanities Collections
Institution: The Shelburne Museum

STATEMENT OF SIGNIFICANCE AND IMPACT

Practical Climate Control, Fire Risk Mitigation, and Lighting Improvements For Shelburne Museum Collections

Shelburne Museum requests a $792,611 Stabilizing Humanities Collections grant from the National Endowment for the Humanities to control harmful temperature and humidity fluctuations, mitigate the risk of fire, and control light damage for important collections housed and exhibited in:

• Circus Building, which houses a 3,000 piece, 500-foot-long miniature circus parade, a 35,000-piece three-ring circus vignette, and 40 Dentzel carousel animals, and will once again exhibit a portion of Shelburne's 563 circus posters (one of the nation's best collections of its kind).

• Dorset House, which contains the country's finest and most comprehensive collections of decoys on public view, numbering nearly 900.

• Vermont House, an 18th-century building that is used as a changing exhibition gallery to examine Shelburne's premier American material cultural artifacts and decorative arts. The second floor of Vermont House and its attached Pierce Shed also provide storage space for the Museum's internationally known textile collections.

• The Electra Havemeyer Webb Memorial Building, which houses a major part of the New York City apartment (whose historic interiors include Impressionist masterpieces by Manet, Monet, Degas, and others) of Shelburne Museum's founder, a pioneering collector of Americana whose family's philanthropy dramatically changed the landscape of American collecting.

Shelburne Museum has considerable experience installing practical climate control systems, lighting, and fire and security controls in historic, reproduction, and purpose-built exhibition buildings. An NEH-sponsored project completed in 1997 led to development of a national model for using practical climate control measures to mitigating humidity and temperature extremes in historic structures, reducing long-term deterioration of artifacts. Numerous historic houses nationwide have installed systems based on Shelburne prototypes over the past seven years. A second NEH sponsored project to be completed in 2005, upgraded fire and security detection systems museum-wide, replaced obsolete wiring, and upgraded exhibit lighting in six historic buildings. This project helped extend the use of Very Early Smoke Detection and Alarm (VESDA) devices to museums, and also developed a safe, efficient, and cost-effective light-emitting diode (LED) interior case light that is already being adopted at other museums.

The proposed project incorporates the most important and successful aspects of Shelburne's first two projects. Ten years of experience indicates that it is safer for both artifacts and the building in which they are exhibited to remove the artifacts from the building; install new heating and cooling systems and

vents, new electrical wiring and lighting devices, and sensing tubes for smoke and fire detection systems in the ceilings and walls; and repair the interiors in one procedure.

Shelburne will employ a successful holistic approach of performing environmental, security, and fire system upgrades, while simultaneously conducting extensive curatorial research and reinterpretation, exhibit upgrades, object conservation, and planning for programming to increase visitors' accessibility to the collections and their intellectual context. By focusing all our attention on one collection and building at a time, we are able to take full advantage of the synergistic effect of all the Museum's specialized and highly trained staff working together.

We know from experience that the final product will be greater than the sum of the parts, resulting in stunning new exhibitions in buildings with environments conducive to the long-term preservation of Shelburne's treasured artifacts. A significant portion of Shelburne's premier decorative and material culture artifacts will be better protected, preserved, and exhibited; more visitors will be attracted to the Museum; and new materials and methods developed during the project will be shared with the greater museum community.

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A. SIGNIFICANCE, USE AND ACCESS

1. History of Shelburne Museum

Shelburne Museum was created by pioneering collector Electra Havemeyer Webb (1888-1960), whose lifetime passion for American folk art and material culture forms the Museum's core collections. Mrs. Webb was the daughter of sugar magnate H.O. Havemeyer and his wife Louisine, who amassed one of the finest collections of Impressionist and Old Master paintings. Mrs. Webb inherited their love of collecting; she began at 19 and now is recognized as a seminal collector of folk art and Americana and as the only woman to create and endow a major art and history museum.

In her collections, she chose works of art and cultural artifacts that best exemplified the ingenuity and craftsmanship of 18th- and 19th-century America. In 1910, she married J. Watson Webb, grandson of Cornelius Vanderbilt, who introduced her to Vermont. She founded Shelburne Museum there in 1947 with one building, and went on to acquire over 30 historic structures that serve as exhibition buildings for her varied collections [See Museum Map and Fact Sheet at **Appendix 3**].

These structures (including the fully restored 220-foot sidewheel steamboat *Ticonderoga*, a National Historic Landmark and the last of its kind in the country) hold 150,000 works artifacts and works of art that represent some of the country's finest and most comprehensive collections of fine, folk, and decorative arts. Shelburne Museum has the largest collections in northern New England and is the region's foremost resource for visual art and material culture spanning four centuries of American cultural life. Some 120,000 visitors enjoy Shelburne's exhibitions and programs each year, and hundreds of others access the collections and resources through archives, symposia, and other collections-related activities.

2. Present and Proposed NEH Projects

The most recent grant from the National Endowment for the Humanities has helped Shelburne make significant improvements for collections in five historic buildings, considerably enhancing the objects' long-term preservation and their accessibility to visitors. Improvements for collections in a sixth and final building will begin this fall under that grant. During the six-year project, the Museum used the NEH grant as leverage and impetus for new scholarship and reinstallations. Building by building, collections were removed and lighting, wiring, security, and fire detection systems were upgraded. New research on the collections was conducted and published; exhibit cases were redesigned to better preserve the artifacts and enhance their presentation; and artifacts were reinstalled with new interpretations. These stunning exhibitions give visitors exciting new points of entry to the study of American material culture. [Articles from regional and national publications covering these projects are attached at **Appendix 4**].

Importantly, Shelburne has noticed a 15% increase in visitors since the NEH-funded project began. The Museum has reinterpreted three historic houses and the folk and decorative arts galleries, and the final building in that grant project will improve environmental conditions for Shelburne's world-renowned textiles collections. During the 18 months that Stagecoach Inn was closed, 87 of the Museum's finest folk art sculptures and paintings traveled to five museums across the country in *A Bountiful Plenty: Folk Art from the Shelburne Museum*, which received national attention from the prestigious *Magazine Antiques* [**Appendix 4C**]. A full-color book, written by Museum curators who uncovered significant new research, accompanied the traveling show and further increased public access to the collection [**Appendix 13C**].

Similarly, a 144-page scholarly book including images of 400 dolls was produced in conjunction with the reopening of the Museum's decorative arts gallery this summer [**Appendix 13A**]. That

exhibition, which also features English and American ceramics, blown and pressed glass, scrimshaw, trivets, and other decorative arts, followed a four-year effort to conserve 283 dolls and their costumes (most of them original) and 25 dollhouses and miniature interiors. That work was supported by Institute of Museum and Library Services conservation training grants.

A third-year conservator intern from the Buffalo graduate program restored 25 French automatons (unusual large-scale wind-up musical toys from the 1890s favored by adults), which formerly were displayed among the dolls without any indication of their mechanical nature. In the reinterpreted exhibition building, automatons are exhibited together in their own gallery, with one operating on demand for visitors and others featured in a video that shows them in operation accompanied by their music. These rare and fascinating objects, along with the new doll installation, were highlighted in an August 2004 *New York Times* article [**Appendix 4A**].

A 140-page catalogue, written by Shelburne's chief curator to accompany the 2003 *Art of the Needle: 100 Masterpiece Quilts of the Shelburne Museum* exhibition, is already in its second printing [**Appendix 13B**]. This exhibition, which opened in 2003 in two buildings, is the largest-ever exhibit of the Museum's quilts. The show was held over this year after contributing to a 6% increase in attendance last season. Forty of these quilts will travel to other museums while Hat and Fragrance Gallery (the final collections building in the current NEH-funded project) is closed for environmental and security improvements beginning next year.

The Museum proposes to use the holistic environmental improvement and curatorial reinterpretation approach they have successfully implemented over the past five years as the model for systems and exhibition upgrades in four additional collections buildings, three of which have not seen significant enhancements since they opened some 50 years ago.

Following the successful model established during the present NEH-supported project, highlights from the nationally known decoy collection and the popular, evocative circus collections will be featured in special exhibitions in Shelburne's Webb Gallery when those galleries are closed. The shows will then travel to other museums while the structures that house them are improved, and curators and educators will publish books that highlight these important artifacts. Once the buildings' environmental, wiring, lighting, security, and fire protection systems are upgraded, we expect that the new scholarship and reinterpreted exhibitions will draw increased audiences and considerable media attention, just as previous reinstallations have. Because the enhancements have led to increased attendance, they have helped to address Shelburne's mission to broaden our audience and engage their curiosity.

All collections included in this project are central to Shelburne's mission to "broaden our audience, engage their curiosity, and give them an extraordinary museum experience." Upgrading the historic and unique structures in which these American treasures are exhibited also speaks directly to two of the Museum's guiding principles. "preserving, interpreting, and making broadly accessible the Museum's collections" and "providing an educational and enjoyable experience for our audiences."

NOTE: Please refer to "Annotated Photographs to Accompany Narrative" at Appendix 1.

3. Humanities Significance of Collections to be Exhibited in Vermont House

When Mrs. Webb moved the former 1790 Asa R. Slocumb house from Shelburne Village to the Museum grounds in 1950, the clapboards and interior walls had weakened to the point that only fragments of the basic structure could be salvaged. Stone from the Shelburne Falls, VT gristmill was laid in random scatterstone patterns to create the solid exterior façade, and the feather-edged boards of the interior walls came from old Vermont and New Hampshire houses. The four fireplaces are original.

a. Past Exhibits

Mrs. Webb pioneered the use of early American buildings of all kinds as exhibition galleries, and Shelburne's unique historic collections buildings are distinctive among art and history museums. Mrs. Webb presented Vermont House as the imagined home of a wealthy retired sea captain who collected his furnishings over decades of travel all over the world. An unusual hand-painted maritime wallpaper that she installed in the former living room remains a prominent and remarkable feature. More recently, however, curators have used the building for special rotating exhibitions drawing on Shelburne's extensive and high-quality decorative arts collections. These special exhibitions significantly enhance the Museum's ability to serve varied audiences and to give visitors increased access to the collections to present new perspectives of life and material culture in early America. Because of the lack of climate control, however, exhibits have been limited to robust artifacts such as metal and ceramics.

From Soup to Nuts: Preparing and Presenting Food (1700-1820) in 2002-03 compared table settings from Europe and America [Photo at **Appendix 1A**]. A display of coffee and tea sets demonstrated the evolution of furniture designed for specific rooms and functions. This specialization of domestic spaces is in marked contrast to the Museum's early period houses, where beds are shown in living spaces. The dining exhibition, which included taped classical music that was prevalent during the 18th and early 19th centuries, highlighted the cross-pollination of trans-Atlantic cultures, with the U.S. simultaneously borrowing from Europe and establishing its own identity.

Because 75% of the Museum's approximately 150,000 artifacts and works of art are on view at any one time, and because the three climate-controlled buildings are used for permanent exhibition of French Impressionist paintings and American landscape, genre, and sporting arts pictures, the Museum does not have appropriate changing exhibition galleries where art and artifacts can be exhibited together. Such a venue is important if Shelburne is to continue to present its exceptional folk and decorative arts holdings firmly in their historical and social contexts in ways that resonate with visitors. Adding environmental controls to Vermont House will create a year-round changing exhibition space for curators and educators to tell important stories about how Americans have, through the last 300 years, lived, worked, spent leisure time, and – importantly – expressed their need to create objects that have both everyday utility and enduring beauty. The work will allow visitors access year-round for the first time.

b. Future Exhibits

Once environmental conditions are safe, an exhibition of French Canadian furniture will present some 40 pieces from Shelburne's extraordinary collection, one of the largest in America and never before on view as an assemblage. Because New England and Canada share a long history – and border – this exhibition, with interpretive labels in both French and English, is an opportunity to decode the intersection of cultural taste, French and English colonial aesthetic concerns, and the development of vernacular North American taste.

Planning also is underway for *Cast and Wrought Iron from England and America: 1700-1900*, an exhibition that will explore the diversity and ingenuity of the design, production, and use of large-scale and miniature iron objects. Masterpieces from the Museum's encyclopedic collections will include trade signs, weather vanes, recreational artifacts (such as toy banks and transportation toys), lighting devices

using various fuels, and food preparation and service objects (such as stoves, clock jacks, and trivets). A catalogue featuring new research by decorative arts curator Jean Burks, who has particular expertise in base metals, will accompany the show.

Curators also are planning an exhibition of Shelburne's collection of more than 800 carved wooden food molds, which world-renowned food historian and author William Woys Weaver has said is the largest and finest in the U.S. The collection includes dairy, pastry, candy, and paste sugar molds from Europe, the Far East, and America dating from the Renaissance and measuring from two inches to two feet. The exhibition will interpret the cultural history of dining over four centuries using food molds and other decorative arts pieces. Most of the food molds have never been published, and research on that collection will culminate in a catalogue.

Another exhibition awaiting climate-controlled gallery space is one examining the impact of foreign-born collectors and dealers who, perhaps because they were outsiders, showed that they had a keen eye for what was uniquely American. Paintings dealer Maxim Karolik, folk art dealer Edith Halpert, and sculptor Elie Nadelman all had enormous influence on Shelburne Museum founder Mrs. Webb and other early collectors of Americana. A show comprising their gifts and sales to Mrs. Webb will be an imaginative view of the artifacts that are considered distinctly American and the story of how they became embedded in our culture.

c. Educational Interpretation and Opportunities

A critical element of Shelburne's educational mission is a commitment to literacy. In addition to maintaining collaborations with schoolteachers and children, Museum educators also work with new adult readers (including refugees resettling in Vermont).

In 2003, education staff created an enormously popular (as evidenced by a 6% increase in attendance) literacy-based exhibition that has become a model for future presentations of children's book authors and illustrators. *From Goodnight Moon to Art Dog: The World of Clement, Edith, and Thacher Hurd* featured this first family of children's literature through drawings, narrative drafts, and interactive components, including a magical re-creation of *Goodnight Moon*'s great green room. The exhibition also included a room holding the full complement of Hurd titles and a rocking chair where daily book-readings were scheduled and families were encouraged to spend time reading together. The show was housed in the Round Barn Welcome Center, which is not climate controlled and which therefore prevented the use of some original documents.

Educators now are planning a second exhibition in the children's literature series: a showcase of works by author/illustrator Barbara Cooney, whose classic *Ox-Cart Man* has long been used in the Museum's guided school programs for elementary school students. The Cooney show will help visitors see 19th-century New England through the eyes of a prominent illustrator who captured the rich fabric of early American life. Vermont House would be a charming venue for the show, but because the exhibit includes original illustrations, it is not likely that institutions and private owners would lend those documents for display in a gallery without climate control.

d. Storage in Vermont House and Pierce Shed

The second floor of Vermont House and the adjacent Pierce Shed provide storage for the Museum's 400 floor coverings dating from the 18th century and 300 woven coverlets from the mid-18th to mid-19th century. The rugs illustrate the process of their manufacture and the influences that affected that process, the cultural environment in which they were made, the prevailing political and economic environments, the social and cultural traditions of the maker, technological advances in the textile

industry, and the available goods used to make these textiles. Because the floor covers were both decorative and practical, they provide important interpretations of American material culture.

Shelburne's collection of hand and machine woven coverlets includes a myriad of weaving styles and patterns. Coverlets were considered more decorative than plain or plaid blankets because of their bold geometric woven patterns. The collection includes many fine examples of Jacquard coverlets in elaborate floral, mosaic, figural, and patriotic patterns. The coverlets are an important complement to the Museum's hand-operated Jacquard loom, which is one of only two such operating looms in the country and which is demonstrated for visitors daily.

4. Humanities Significance of Decoy Collection in Dorset House

The finest and most comprehensive collection of working and decorative wildfowl decoys on public view in the U.S. is housed in Shelburne Museum's Dorset House [**Appendix 1B**]. The structure was built in 1832 by Welcome Allen of East Dorset, VT and is an excellent example of Greek Revival architecture. The house's design is substantial but unpretentious. The façade is dominated by a massive cornice, and slabs of marble serve as the foundation and porches. Its 2½-story front-gable main block is flanked by cross-gabled wings that give the building classical balance and symmetry.

In 1953, Mrs. Webb (a great sportswoman as well as a passionate collector of folk art) bought Dorset House, had it dismantled, and moved it to the Museum grounds to serve as exhibit space for her newly acquired decoy collection. The collection has since grown to include nearly 900 pieces and is known internationally for its range and quality.

a. Decoys

Wildfowl decoys, made to lure game birds to within shooting range, have been used for centuries, and Shelburne's collection includes decoys attributed to native hunters from Maine or Nova Scotia. The earliest decoys made by settlers probably were carved in the late 1700s, and by 1840 the wooden decoy was a firmly established American hunting tradition.

After the Civil War, improved transportation systems, more advanced weapons, and abundant game created the opportunity for widespread waterfowl hunting. Professional market gunners supplied game to meet intense public demand, and well-made decoys were among their vital tools. To meet the needs of market gunners and well-to-do sportsmen who traveled from the cities to shoot birds, more and more craftsmen turned to decoy-making. Before 1900, firms such as Mason's Decoy Factory of Detroit, which employed a number of carvers working from the same patterns, offered decoys by mail order. Federal conservation legislation brought the market-gunning era to an end just after World War I, but sportsmen continued to hunt over wooden decoys until after World War II, when inexpensive molded plastic decoys became prevalent.

Shelburne's decoys include superb examples by master craftsmen from all over North America, including many by A. Elmer Crowell of Cape Cod, MA (1862-1952), a versatile commercial carver whose working decoys, decorative carvings, and miniatures are much sought after and highly regarded for their exceptional craftsmanship. Other well-known carvers represented in the collection include John Blair, Bill Bowman, Nathan Cobb, Lee Dudley, James Holly, Jr., Nathan Rawley Horner, Albert Laing, Joseph Lincoln, Charles Osgood, Lem and Steve Ward, George Warin, and Shang Wheeler. In addition, renowned decoy factories such as Mason Decoy, American Decoy, Dodge Decoy, Rose Folding Decoy, and Stevens Decoy are represented. A small but important group of fish decoys is also included in the collection.

Mrs. Webb acquired the core of the decoy collection in 1952 upon the death of preeminent collector Joel Barber, a New York City architect, artist, carver, and historian. In his seminal book *Wild Fowl Decoys* (1934), Mr. Barber was the first to identify decoys as art and historical artifacts, representing both sport and commerce. His collection, amassed over 35 years, includes more than 400 superior decoys covering America's greatest gunning regions and representing almost every species of duck, goose, and shorebird. It also includes his own handmade decoys, watercolors and drawings, and his large wooden workbench and tools.

Acquisition of the Barber collection set the stage for Shelburne Museum to attract other important decoys, including masterpieces by Frank Ash, Richard Moeller, Ted Mulliken (founder of the Wildfowler Decoy Company), and sporting artist Richard Bishop. Shelburne's collection has grown over the past five decades and now spans 150 years of decoy making in New England, Long Island, the New Jersey coast, the Chesapeake, North Carolina's Outer Banks area, and the Gulf states.

Miniature bird carvings, paintings and prints of hunting scenes and American birds (including 60 rare hand-colored engravings by John James Audubon), and decoy patterns complement the carvings, and examples of gunning boats, shotguns, and punt guns are exhibited with the decoys.

A letter of support from decoy expert Robert Shaw is at **Appendix 12A**.

b. Loans from Shelburne's Decoy Collections include:

- An American Sampler: Folk Art from the Shelburne Museum, *which toured to National Gallery of Art, Amon Carter Museum, Denver Art Museum, Los Angeles County Museum of Art, The Wadsworth Atheneum, The New York Historical Society, and Worcester Art Museum in 1987-1990: 18 decoys*
- Bountiful Plenty: Folk Art from the Shelburne Museum, *which toured to The Columbus Museum of Art, Georgia Art Museum, Kalamazoo Institute of Arts, Fresno Metropolitan Museum, and The Speed Art Museum in 2000-02: eight decoys and Crowell's Bird Models trade sign.*
- *Winter Antiques Show in New York City, January 2003: decoy*

c. Educational Interpretation and Opportunities

As is often the case with historic structures, the features that make Dorset House so charming as an exhibition space also present challenges for curators. The remarkable Audubon prints have been moved to storage because high humidity and ambient light were causing deterioration. Although some lights in display cases have been removed to prevent further deterioration of paint on the decoys, light intensities remain unacceptably high on some objects while others are in shadow. In short, this internationally important collection is under-interpreted.

Reinstallation will provide visitors with much more contextual information, exploring the evolution of hunting from necessity to sport and the development of environmental awareness and protection of species and habitats. Special exhibitions and programs will feature the Barber collection (including decoys and a re-creation of his workshop and research areas); highlight famous makers (such as Elmer Crowell); discuss decoys' role in commerce and sport in various geographic regions of the U.S.; and include the extraordinary Audubon prints.

Collector and carver Don Preston of Toronto presents popular annual fish decoy carving demonstrations and special hands-on decoy painting activities for children. This accomplished contemporary folk artist's demonstrations help visitors understand and appreciate the craft and the American traditions in which it has its roots. If funded, this project will focus museum educators'

attention on the important reinterpreted collections in the Dorset House, providing the opportunity to create more engaging and interactive programs for children and students.

5. Humanities Significance of Circus Collections in Circus Building

When Mrs. Webb moved the former 1790 Asa R. Slocumb house from Shelburne Village to the Museum grounds in 1950, the clapboards and interior walls had weakened to the point that only fragments of the basic structure could be salvaged. Stone from the Shelburne Falls, VT gristmill was laid in random scatterstone patterns to create the solid exterior façade, and the feather-edged boards of the interior walls came from old Vermont and New Hampshire houses. The four fireplaces are original.

The traveling circus was an annual early American event presaged by bold, colorful posters boasting exotic animals and dramatic new acts, and the anticipation of animals, bands, and clowns parading through town and performing under the big-top tent was palpable in 19th- and early 20th-century communities. The circus was transformative, bringing residents together and giving them (many of whom never traveled far from home) an important window on the world at a time before radio and television became prevalent.

a. Arnold Circus Parade

Circus Building is a fanciful horseshoe-shaped structure designed for Museum founder Electra Havemeyer Webb to showcase a 518-foot-long hand-carved miniature circus parade. The vignette – which recreates a spectacle now gone forever – evokes the expectation and wonder that traveling circuses brought to early American communities and that continue to fascinate us today. The 112 attractions from the Buffalo Bill Wild West Show, Barnum & Bailey, Ringling Bros., and Robinson circuses wend their way along the one-tenth mile length of the outside wall, allowing Museum visitors to watch the parade wagon by wagon.

The parade comprises more than 4,000 carved figures and accessories and was created over 30 years by Roy Arnold of Hardwick, VT and four other skilled woodcarvers. The Arnold Circus Parade, a virtuoso work carved on a 1 inch:1 foot scale, exemplifies the wonderful creative spirit that inspired Mrs. Webb to collect American objects. No two of the 400 draft, riding, and driving horses in the parade have the same stance, and each of the wagons accurately reproduces those used during the Golden Age of the American traveling circus (*c.* 1870-1940).

The Arnold Circus Parade includes riders from throughout the world, including Argentine gauchos, Bengal lancers, French cuirassiers, German uhlans, Italian bersaglieres, Russian cossacks, and the U.S. Rough Riders. Horse-pulled wagons hold bison, crocodiles, elephants, gazelles, giraffes, kangaroos, leopards, lions, monkeys, okapis, peacocks, polar bears, seals, snakes, tapirs, tropical birds, wild boars, zebras, and zebus. Tableaus range from Sudanese men drawn by a 16-camel hitch to Knights of the Round Table to Cinderella and Sinbad the Sailor.

b. Kirk Brothers Circus

Another 20th-century folk art masterpiece in this building is the miniature Kirk Brothers Circus. Whereas the Roy Arnold Circus pieces were created with detailed accuracy in mind, the Kirk figures are more evocative suggestions of reality, carved by an unschooled adult remembering the excitement of circuses from is youth. This 35,000-piece scene portrays a three-ring circus complete with animal acts, clowns, trapeze artists, bands, side shows, and bleachers full of vendors and spectators.

Edgar Decker Kirk of Harrisburg, PA hand-carved and -painted the figures over nearly 50 years. Mr. Kirk, a brakeman on the Pennsylvania Railroad, lived across from the state capital's circus grounds,

and events there held a lifelong fascination for him. He worked at night after 12-hour shifts on the railroad, using a treadle-operated jigsaw to cut scrap lumber into forms and completing the carving with a penknife. In addition to the finished miniatures, Shelburne's holdings of some of Mr. Kirk's patterns and tools and a notebook in which he planned the figures form a complete record of the creative process.

The extraordinary detail represented in these circuses and the uniquely American folk art traditions in which they were created make these collections especially beloved and irreplaceable artifacts. Because the miniature folk sculpture vignettes are so extensive and detailed, they provide both scholars and general visitors with views of the social and economic context in which the circus operated. (The Kirk Brothers Circus, for example, portrays African Americans as roustabouts and as spectators in segregated seating.)

c. Circus Posters

Shelburne also has some 500 circus posters, which form one of the finest and most comprehensive collections of its kind in the country. It includes many extremely rare, early posters as well as examples from all the major circuses, including Barnum and Bailey, Ringling Brothers, Adam Forepaugh, John B. Doris, and Sells Brothers. The works represent examples of early American graphic arts and marketing; the brightly colored posters and their bold claims about performances are from an era when truth in advertising was less important than drawing a crowd. Shelburne conservators reluctantly removed over 200 posters from display in 1983 when environmental conditions in the building were found to be destroying the fragile works on paper. These, along with letters and memorabilia from P.T. Barnum, remain an important resource for scholars, and curators and conservators look forward to returning to public exhibition a representative sample of these fragile but important works.

A letter of support from Kristin Spangenberg, Curator of Prints, Drawings and Photographs at the Cincinnati Art Museum, is at **Appendix 12B**.

d. Dentzel Carousel

Forty carousel figures, 4 chariots, and 16 painted rounding boards made in 1902 by Philadelphia's celebrated Gustav Dentzel Carousel Company line the inside curved wall of Circus Building. The Dentzel firm, which operated for 50 years beginning in the 1870s, produced exquisite carousel figures. Several carvers worked the animals, but master craftsman Daniel Muller carved the expressive heads and much of the detailed finishing work that is so evident in Shelburne's pieces. The carousel was built for the Sacandaga Amusement Park at the end of the rail line in Northville, NY.

Over the past 15 years, conservators have cleaned and preserved one-third of the figures, which include horses, giraffes, goats, reindeer, and a lion and tiger and which remarkably have nearly all of their original paint. Post-graduate interns and conservation students conserve one or two additional carousel animals each summer. These figures complement an operating vintage Herschell and Spillman carousel that Mrs. Webb installed just outside Circus Building and that remains enormously popular among visitors today.

e. Loans from Shelburne's Circus and Carousel Collections include:

- U.S. Embassy in Switzerland in 1996-99: portions of Kirk Brothers Circus
- *An American Sampler: Folk Art from the Shelburne Museum*, which toured to National Gallery of Art, Amon Carter Museum, Denver Art Museum, Los Angeles County Museum of Art, The Wadsworth Atheneum, The New York Historical Society, and Worcester Art Museum in 1987-1990: Fairy Tale Wagon carving and five Dentzel carousel figures

- *Bountiful Plenty: Folk Art from the Shelburne Museum*, a special exhibition at Shelburne that toured to The Columbus Museum of Art, Georgia Art Museum, Kalamazoo Institute of Arts, Fresno Metropolitan Museum, and The Speed Art Museum in 2000-02: lion wagon from Kirk Brothers Circus and two Dentzel carousel figures

f. Educational Interpretation and Opportunities

Shelburne Museum library resources support research for circus exhibitions including a rare first edition of the Dunlap Society's 1898 publication of Isaac John Greenwood's *The Circus: its origin and growth prior to 1835*, (published in an edition of 260 copies, consisting mainly of plates with just over 100 pages of text), along with prints collected by Harry T. Peters.

After environmental controls are installed in Circus Building, educators will resume regular gallery talks for adults and children and re-launch a summer circus arts camp for children in conjunction with the region's primary performing arts theater. In addition, educators will produce both general purpose and children's books based on Shelburne's circus collections. Elementary and (particularly) middle school teachers often focus their curricula on the circus for interdisciplinary teaching of geography, history, mathematics, physics, and language arts, and Museum educators will be able to capitalize on this interest when the building is accessible for more of the school year.

The center of the spruce and cedar-sided Circus Building is elevated by huge boulders that create a magnificent arch. During the past three summers, it was through this arch that equine and human performers in an exceptional program, Dances With Horses, made their dramatic entry. The Museum will continue to seek ways to feature and dramatize this popular and evocative collection.

6. Humanities Significance of Fine and Decorative Arts Collections in Electra Havemeyer Webb Memorial Building

Electra Havemeyer Webb Memorial Building [**Appendix 1D**] was designed by Mrs. Webb as a memorial to her parents and as an inviting space in which to share her European and Asian paintings and fine furniture and decorative objects with the public. She modeled the Greek Revival structure after a farmhouse in Orwell, VT. After her death in 1960, Mrs. Webb's children fulfilled her wish by constructing the building and installing seven rooms of her New York City Park Avenue apartment.

a. Collections

Electra Havemeyer Webb Memorial Building exhibits the Museum's collections of Impressionist art (the only such public collection in the state of Vermont and one of only two in northern New England), Asian art, and exceptional English and American decorative arts in an extraordinary context. EHW Memorial Building is not a traditional gallery but seven rooms from Mrs. Webb's City Park Avenue apartment relocated to the Museum in 1967, with the interiors recreated to their design of the 1930s. As such, the building conveys fascinating perspectives both of how a pioneering collector lived and of crucial influences on her collecting style. As a recreated home, EHW Memorial Building is without peer as an engaging and authentic format to access some of the most pivotal works of the Impressionist era. Furthermore, visitors observe in vivid detail the evolution of an unparalleled contribution to cultural preservation in this country by women collectors over two generations in Louisine Havemeyer and her daughter Electra Havemeyer Webb.

Throughout the rooms of EHW Memorial Building hang 21 Impressionist and pre-Impressionist works of art, many of which were collected by Louisine Havemeyer and left to Mrs. Webb following Mrs. Havemeyer's death in 1929. They include five works by Claude Monet; four by Mary Cassatt; three each

by Eduoard Manet, Edgar Degas, and Jean-Baptiste-Camille Corot; and two by Gustave Courbet. Louisine Havemeyer amassed one of the earliest and most important collections in America of modern French paintings, most of which (about 500) she bequeathed to the Metropolitan Museum of Art in 1929 in one of the most significant gifts ever made to an American museum. Visitors may wander through the living room and dining room, experiencing the interiors, furniture, and paintings as the family did.

Mrs. Webb inherited her mother's independence and passion as a collector and her public-spirited zeal for cultural preservation. The pictures she chose to keep and hang in her home are some of the most historically pivotal examples from the Havemeyer holdings. These include Monet's *Le Pont, Amsterdam (1874),* widely believed to be the first work by that artist brought to America, and Manet's *Le Saumon (c. 1864-65)*, purchased in 1886 at the first Impressionist exhibition in this country. The rooms of EHW Memorial Building personify the inspiration Mrs. Webb drew from her mother and the links between these groundbreaking women, one on the leading edge of avant-garde art, the other establishing a whole new museum and platform to access the material culture of American vernacular life.

In EHW Memorial Building's entrance hall hangs what is perhaps the most powerful statement of this collecting heritage and an extraordinary avenue through which to explore issues of wealth, collecting, and cultural preservation: the 1895 pastel by Mary Cassatt, *Portrait of Louisine Havemeyer and her Daughter Electra*. [**Appendix 1D**] In this one picture are the intersection of the worlds of Impressionism, patronage, and a nascent collecting dynasty.

Mrs. Webb's apartment evokes not only this remarkable chapter of American collecting history but also a rare view into the realm of wealthy New York society in the 1930s. The ensemble of high-style art and furnishings from Europe and Asia establishes a clear example of the types of material objects that communicated wealth and stature at the time. It also offers a striking juxtaposition to the ensembles of 18th- and 19th-century material culture forms that Mrs. Webb displayed at Shelburne Museum. EHW Memorial Building is a crucial point of departure in understanding her central role within the Colonial Revival movement of the early- and mid-20th century, and by extension the growth of that aesthetic as a product in part of nostalgia for the agrarian vernacular in wealthy industrial circles.

A letter of support from Art Historian John Wilmerding, grandson of Shelburne Museum founder Electra Webb, addressing the EHW Memorial Building interiors is at **Appendix 12C**.

b. Loans Featuring Collections from Electra Havemeyer Webb Memorial Building include:

- *Manet's* Grand Canal (Blue Venice) *(1874) has been loaned to five museums in the past five years: The National Gallery in London, Van Gogh Museum in Amsterdam, Clark Art Institute, Art Institute of Chicago, and Philadelphia Museum of Art*
- *Monet's* Le Saumon *(c. 1864-65) has been loaned to four museums in the past five years: Walters Art Gallery, Musée d'Orsay, Phillips Collection, and Museum of Fine Arts, Boston.*
- *Monet's* L'Eglise de Vernon, Brouillard (Vernon Church in the Fog) *(1894) and* Charing Cross Bridge, Londres *(1899) are on exhibition at Nara (Japan) Prefectural Museum of Art, 2004*

c. Educational Interpretation and Opportunities

Special exhibitions, gallery talks, guided tours, and public programs offer varied points of access to the collections of Memorial Building and the issues they embody. Examples include regular docent-led tours, first-person interpretations of Claude Monet and Mary Cassatt, and regular music recitals held at the building to evoke a mood complementing the style of the rooms.

A major exhibition under development is *Louisine Havemeyer and Mary Cassatt: The Art of Friendship*, which will explore in depth the unique relationship between artist and collector that has resulted in far-reaching cultural benefits to the public. The exhibition also will address the active role each played in the women's suffrage movement, which included a 1915 exhibition organized by Mrs. Havemeyer to support the cause.

7. Intellectual Control of the Collection

Shelburne Museum's Collections Management department maintains all object and acquisition documentation. Object files for each object contain research, provenance information, publication use, exhibit use, location tracking, conservation treatment reports, condition reports, citations, and other useful information generated or found by Museum staff. Accession files contain legal documents of transfer and correspondence leading to the acquisition. Catalogue ledgers contain photographs, detailed descriptions, measurements, location, and provenance information for each object. Recent acquisitions and collection inventories are maintained in a computer database. A hard copy of each entry is placed in the catalogue ledgers. Digital images are taken of each object when it is inventoried or catalogued. Images are stored in a computer program, using objects' accession numbers for tracking. A hard copy of each image is printed and placed in the catalogue ledger along with its catalogue entry.

B. Current Conditions

1. Vermont House and Pierce Shed – Current Conditions

Vermont House has a heating system that has been used to heat the first floor exhibit area to comfort levels during the Museum's public season (May through October) and to about 50ºF during the winter. Even this low level of winter heating resulted in very dry conditions that caused furniture permanently installed in the building for 40 years to crack and split. The *Engineer's Report* from Climate Notebook software summarizes one year of temperature and humidity conditions in Vermont House galleries. Results of several years of monitoring of temperature and relative humidity are summarized on the Vermont House psychometric chart attached at **Appendix 8B**.

In 1998, the exhibit area was changed from a historic house interpretation to an exhibit gallery for changing shows that highlight various collections. However, since the gallery is not properly climate-controlled, curators are limited to exhibitions of artifacts that will not be harmed by the poor climate conditions, i.e. metals and ceramics. These exhibits have been well received by the public, and curators have plans for more humanities-based exhibits if the building's environment can be improved to allow the safe exhibition of a wider range of artifacts. A stand-alone humidifier and two window air conditioners presently improve climate conditions to some extent (reducing humidity levels to about 70% during the summer), but they still fall short of maintaining conditions that are safe for the range of artifacts that need to be exhibited.

A new low-voltage gallery lighting system was recently installed in Vermont House, and interior storm windows that filter UV light and some visible light are in place. However, darker window filters and roll-down blinds are still required on some of the windows.

The second floor of Vermont House and the attached Pierce Shed are storage areas for Shelburne's collection of floor coverings, coverlets, costumes, and costume accessories. Window air conditioners and stand-alone dehumidifiers are the only methods of reducing heat that can reach 90+ºF and humidity above 80% in these spaces during the summer. Even with these stop-gap measures, humidity levels still regularly exceed 70%. Doors have been removed from built-in closets and fans

circulate air to prevent mold, but a long-term solution is required to improve conditions for the preservation of the stored collections.

2. Dorset House – Current Conditions

Shelburne's unparalleled collection of waterfowl and related decoys are exhibited in Dorset House. This building has never had any type of climate control system, and there is no insulation in the building. A significant amount of moisture enters the building from the dirt floor in the basement. Temperatures fluctuate widely with outdoor conditions, and relative humidity (RH) levels exceed 80% at interior temperatures of 90°F for extended periods in the summer and fall. The high humidity that permeates the building is causing metal components to corrode, protective varnishes to prematurely darken, and paint to flake from metal and wood substrates [see photos at **Appendix 1B**]

The *Engineer's Report* from Climate Notebook software presents two years of temperature and humidity conditions in the Dorset House. Results of several years of monitoring temperature and relative humidity are summarized on the Dorset House psychometric chart attached at Appendix 8C. The red area indicates the present range of temperature and humidity experienced by the decoys. The green area indicates the range of temperature and humidity that these artifacts will experience after climate control systems are installed. There is no question that the extreme humidity and temperature levels accelerate deterioration of even these robust artifacts and adversely influence long-term preservation of the most important decoy collection on public exhibit in the US. Because there is no heat in Dorset House, relatively humidity remains at relatively safe levels during the winter.

Conditions could have been worse. Had a heating system been installed and the building heated to 68º for human comfort in cold weather without adding humidification, as was formerly the case in several of our other historic collection buildings, the humidity would have plunged below 20%. Such low RH conditions would have severely dried the wooden artifacts, causing the wood to crack and paint to flake. Buildings at Shelburne where this type of damage was most apparent were designated as a higher priority in the Long-Range Preservation Plan for environmental mitigation and have been improved during earlier NEH-sponsored projects.

That we are just now addressing environmental problems with Dorset House, Circus Building, Vermont House, and EHW Memorial Building does not mean these buildings do not have serious problems. It means that these problems were, by necessity, a lower priority than the even more serious issues in buildings like Stagecoach Inn, Variety Unit, and the historic buildings that house collections of important folk art sculpture, dolls and toys, and decorative and utilitarian artifacts, respectively.

Excessive light from old fluorescent fixtures installed inside the cases and used to illuminate the decoys for the past 50 years has faded decorative paint. This is in spite of efforts to reduce deterioration that included removing bulbs from half the fixtures and applying ultraviolet filters to the fluorescent bulbs that remained. Light levels in the cases are very uneven, ranging from 130 foot-candles (fc) on decoys near the fluorescent lights to 15fc in darker areas in the center of the cases. Old fluorescent light ballasts that generate significant heat are a potential fire hazard. Dorset House is one of the few museum buildings with a sprinkler fire suppression system, but a more sensitive fire detection system should replace the basic heat detectors currently in the building. Audubon prints were removed from the building several years ago because of high humidity and high ambient light levels, and other artifacts remain at risk.

3. Circus Building – Current Conditions

Circus Building has never had any type of climate control system. As a result, humidity can exceed 90% in the summer on humid days when moisture condenses on the cool, 500-foot-long horseshoe-shaped concrete slab floor. Temperatures fluctuate widely with outdoor conditions. Results of

several years of monitoring temperature and relative humidity are summarized on the Circus Building psychometric chart [**Appendix 8D**].

This high humidity took its toll on over 200 circus posters that had been tacked to the wall for 30 years. Many of the paper posters were severely distorted, and insects were nesting in damp pockets behind them. In 1984, shortly after the Museum hired a conservator, the posters were removed and placed in climate-controlled storage in order to slow their rapid deterioration. Fortunately, most of the posters can be conserved, but they cannot be safely exhibited again in Circus Building until the high RH is reduced. Even with fans moving air in the building, mold still forms on some of the 50+ carousel animals on permanent exhibition [see photos at **Appendix 1C**].

The miniature Arnold Circus Parade, which the building was constructed to house, consists of small painted wooden figures and wooden circus wagons with metal fittings, silk flags, and leather reins extending from the wagons to the horses that pull them. High humidity has caused paint to flake particularly from metal fittings and from some of the wooden substrates. The leather reins have weakened and split, and many have been replaced with new leather. Thirty years of high light levels averaging 65fc from 500 feet of two rows of 8-foot-long fluorescent bulbs have caused silk flags on the Arnold Circus Parade to deteriorate and paint to fade [**Appendix 1C**]. Although half the lights have been turned out since 1984, light levels are still very high (80fc+), and only the replacement of all fluorescent fixtures with smaller units will reduce exposure to safer acceptable levels (8fc).

Years ago, the Dentzel carousel animals exhibited in this building were coated with linseed oil in a misguided effort to protect the wood and vibrant painted colors. Years of excessive and fluctuating humidity have caused the oil film to darken to the point that the colors are nearly completely hidden. Fourteen of the 40 animals have been cleaned to date [see photos at **Appendix 1C**].

Heat detectors are the only fire detection system currently installed in this unheated building.

4. Electra Havemeyer Webb Memorial Building – Current Conditions

This building houses seven rooms from Shelburne Museum's founder's apartments that were moved intact from New York City. Although the building is completely climate controlled, it has no insulation in the walls, and heat and humidity easily escape from the building during the cold winters. This is evidenced by flaking paint and deteriorating wood on the exterior of the building. Insulating this building will calm relatively broad temperature and humidity fluctuations (see *Engineer's Report* from Climate Notebook at Appendix 8E), extend the life of artifacts exhibited and stored in the building, help to preserve the building fabric, and save energy and money. Because of the sensitivity of the paintings on canvas to changes in relative humidity, this is one building that <u>does</u> require a tighter climate control range than 35% to 60% RH maintained in other collection buildings. Even though the wax-lined paintings can safely withstand wider variations than unlined paintings, a safer target RH for this building is 50% +or- 5%.

The only light control on the large windows is Venetian blinds [see photos at **Appendix 1D**]. Natural light entering through the nearly closed blinds is still too bright (100 fc), and UV light entering through the windows averages 150 microwatt/luman and needs to be reduced or eliminated. Tinted, UV-filtering interior storm windows are a high priority for this building to protect the original furnishings from light degradation and to prevent moisture from forming on the windows in this humidified building during frigid Vermont winters. Although the EHW building has basic smoke and heat detectors, a more sensitive VESDA fire detection system is a critical need for this building, which contains Shelburne's most precious artifacts. The intrusion detection system needs to be enhanced with additional motion sensors and equipment to annunciate alarms.

C. Planning and History of Preservation Actions

1. General Survey and Long-Range Preservation Plan

In 1980, Shelburne Museum began systematically assessing the risks to its collections by conducting a general conservation survey of its vast collection of folk art, fine art, decorative arts; buildings; textiles; horse-drawn vehicles; tools; and other utilitarian and cultural artifacts. Partially funded by a grant from the National Endowment for the Arts, the survey was performed by five nationally prominent conservators. The results are summarized in the document Conservation Planning, Appendix 2 of the Long-Range Preservation Plan [Appendix 6].

Following the recommendation of all the conservators who participated in the survey, Shelburne Museum hired a full-time professional conservator in1982 to establish conservation at the Museum. In 1985, the conservator wrote the first Long-Range Conservation Plan, incorporating all the recommendations enumerated in the general survey report. This plan has been revised, broadened, and updated annually. Each year, completed actions are moved to Appendix 1 of the plan and new initiatives are added. The resulting document serves not only as a list of preservation actions still requiring completion but also as a record of preservation and conservation accomplishments over the past 22 years. The Museum's highest conservation priorities are the proposed upgrades of the identified collections protection systems in Circus Building, Dorset House, and Vermont House and insulation, light-filtering interior storm windows, and VESDA fire detection for EHW Memorial Building.

2. Risk Assessment

Risk assessments of the buildings and collections conducted by the Directors of Preservation and Conservation, Buildings Preservation, and Protection Services in 1990 determined four areas of immediate concern:

- Significant damage to artifacts has been caused by extended exposure to high light levels, especially from unfiltered natural light entering buildings through historic windows and from outdated fluorescent lights mounted inside cases.
- The advanced age of lighting and wiring systems (40-50 years) within old wooden structures increases the dangers of catastrophic fire.
- High humidity levels in buildings with no climate control distort paper artifacts, cause mold growth, and accelerate deterioration of protective paint and varnish coatings on painted objects.
- As the value of the Museum's collections of decorative arts, folk art, and utilitarian artifacts increases, so does the susceptibility of the collections to theft.

Although the past two NEH projects addressed these concerns in the majority of the collections buildings, risks have not yet been properly addressed for the very significant collections housed in the four buildings that are the main focus of this project.

3. 1992 Environmental Improvement Project

The requirement to protect 150,000 objects displayed in 27 collection buildings from fire, theft, handling, and environmental factors (such as light, improper temperature and humidity, and pests) as identified in the general conservation survey was nearly overwhelming, and it took several years of study, planning, and building capacity before improvement actions could be initiated. Because poor environmental conditions in many buildings were causing alarming damage to artifacts, the Museum decided to begin with an environmental improvement project focusing on practical climate control methods that would attenuate environmental extremes in the buildings containing the most important

collections. A six-year, $1.3 million environmental improvement project, supported by a $562,000 NEH grant, was initiated in 1992 and completed in 1998.

This project improved temperature and humidity conditions for approximately 70% of the collection objects. Methods such as moving water away from buildings to reduce high interior humidities, treating dirt roads and paths to control dust, humidistatically controlled heating and ventilating collection buildings, and controlling interior humidity levels to broader safe temperature and humidity standards were the first alternatives to complete HVAC climate control for historic buildings to be proposed, implemented, and evaluated on any appreciable scale in the U.S. A portion of the final report describing the accomplishments of the 1992 NEH Environmental Improvement Project is attached at **Appendix 7B**.

4. 1999 Fire, Security, and Lighting Improvement Project

An updated risk analysis of Shelburne's collections in 1995 indicated that it was necessary to address other significant threats to the collection, such as fire, theft, and dangerous lighting conditions. A second NEH grant (for $700,000 in support of a six-year, $1.8 million project) was received in 1999 to upgrade fire and security detection systems, building wiring, and exhibit lighting in six historic buildings. Curators and exhibit personnel refurbished these six buildings and reinterpreted the collections as part of the Museum's match, greatly enhancing access by visitors. Work on five of the six buildings has been completed, and the sixth building is scheduled for completion in 2005.

This project led to the development of a safe new in-case light emitting diode (LED) lighting system that is already exciting the museum community. Although the proposed water mist fire suppression system did not prove feasible for Shelburne's buildings, the Museum's NEH Project Director played a significant role in introducing that system to the museum community and installing an operating prototype water mist fire suppression system in a major historic house museum. In addition, a new VESDA (Very Early Smoke Detection and Alarm) device significantly increased fire detection sensitivity in museum buildings while eliminating visually intrusive smoke and heat sensing devices from the ceilings of historic buildings. The fifth-year status report for the 1999 NEH Fire, Security and Lighting Improvement Plan is attached at **Appendix 7A**.

5. Contributions to the Museum Community

Many other museums have benefited from the practical climate control methods and procedures initiated, evaluated, and developed by Shelburne during the first NEH project. Shelburne's Director of Preservation and Conservation has published project results in professional journals [see articles at Appendix 9A and 9B]. He promotes the benefits of practical climate control by teaching regular preventive conservation classes for the American Association for State and Local History and lecturing at conservation graduate training programs and various professional museum organizations (including the American Institute for Conservation, the Mid-Atlantic Association of Museums, the Association of Preservation Technology, and the Getty Conservation Institute) [lectures enumerated in Resume at Appendix 10]. He continues to field numerous questions from historic house museums across the nation on the design and effectiveness of the innovative practical environmental improvements developed at Shelburne, and he actively consults on improving collection environments in historic house museums.

The greater museum community is also benefiting from advances made during the second NEH project to improve fire and security detection and reduce the risks of fire in collection buildings. Other museums are beginning to install VESDA devices and water mist fire suppression systems, and there is significant interest in the LED Illuminating Assembly case lights used to illuminate dolls, dollhouses, and miniature interiors. Interest is growing in the use of residential heating and cooling systems to improve

environments for collections in historic houses and small museums, an innovation to be further explored in the proposed project.

D. Methodology and Standards

1. Broadening Standards

A collection and campus as large and diverse as Shelburne's requires more than a "one-size-fits-all" approach to environmental control. In addition, more than 20 years of study and experience with the effects of temperature and humidity changes on collection artifacts has led to the conclusion that stringent, narrow environmental standards (50% RH ± 3%, 68ºF ± 5º) are not required for long-term preservation of most of the artifacts in Shelburne's collection [see *Relative Humidity and Temperature Guidelines: What's Happening* at **Appendix 9C**]. This is fortunate, because few museums of Shelburne's size could afford to purchase, install, and continually operate systems to maintain such standards. What is required is a climate-control system that will reduce the more dangerous extremes in temperature (above 80ºF) and RH (above 65% and below 30%) and that can be sustained and supported by the institution.

Shelburne's practical approach to environmental improvements since 1986 had been to improve environmental conditions by eliminating the most damaging temperature and humidity extremes to maintain reasonable RH conditions between 35% in the winter and 60% in the summer. Specific materials research published in 1994 by scientists at the Smithsonian Institution's Conservation Analytical Laboratory raised the upper "safe" limit to at least 65% for the type of general collection artifacts found in historic house museums. [See *Relative Humidity Re-examined* at **Appendix 9D**]. Therefore, any system that could reduce high summer RH levels to "only" 60% would still significantly increase the long-term preservation of Shelburne's collections.

It is also important to note that some artifacts do require stringent temperature and humidity standards and to maintain appropriate climates for such artifacts. Insulating EHW Memorial Building is an example of a proposed action that will enable the Museum to maintain tighter environmental standards (50% +or- 5%) to enhance preservation of the Impressionist paintings, which are quite sensitive to humidity changes.

2. Methodology - Building Improvements to Decrease Interior RH Extremes

Results of a several years of monitoring temperature and RH levels in Dorset House, Circus Building, Vermont House, and EHW Memorial Building indicate that humidity is highest in the summer and that relatively high levels continue into the fall. Because Dorset and Circus have not been heated in the winter, these interiors do not experience dangerously low RH during winter months. However, the heated Vermont House and EHW Memorial Building are too dry during cold weather [see environmental monitoring results at Appendix 8]. The data indicates that climate control systems are required that will reduce RH primarily during the summer but also during the spring and fall, in the Vermont House and Dorset House, and especially in Circus Building. RH must also be increased in Vermont House and EHW Memorial during the winter. A detailed list of all the proposed improvements for each building is included in the Work Plan at **Appendix 2**.

Preventing water from entering a building is the first step to reducing humidity levels. Gutters and downspouts will be installed to collect water and direct it away from buildings into the site storm drain system. The dirt floor in Dorset House will be covered with concrete and a vapor barrier. The slate roof on the north side of Vermont House is in poor condition and could soon begin to allow water to penetrate the building. The Museum will replace this roof as part of its match for the project.

a. Insulating Buildings with Blown-in Dense-packed Cellulose

All four buildings will be insulated using dense-packed cellulose blown into the attics and wall cavities, and the buildings will be sealed with weather-stripping and caulk to minimize moisture infiltration and movement. In addition to saving energy and reducing heating and cooling costs, the humidity buffering capacity of the dense-packed cellulose will significantly calm temperature and humidity fluctuations. Blown-in cellulose also stops air movement and moisture flow within walls, limiting moisture infiltration and facilitating dehumidification of the building. The fire-retardant treated cellulose will not support combustion, and in addition to insulating the structure, the densely packed cellulose effectively stops air movement within the wall cavities. As a result, insulating a building with dense-packed cellulose insulation effectively fire-proofs the structure as well.

Blown-in insulation is the only type that can be installed in historic buildings without significantly disturbing interior and exterior historic surfaces. Because all wall cavities will be filled with insulation, it is important that the electrical wiring be updated before the building is insulated. This well-tested insulating method has been used very effectively in low-cost housing nationwide. [Two articles by Fred Lugano on the benefits of this insulating technique are at **Appendix 5C**.] Mr. Lugano's company Lake Construction Ltd. is well known for their promotion and use of this proven insulating method. At Shelburne Museum, dense-packed cellulose has proven very effective in the General Store, a historic exhibition building, and the Decorative Arts Storage Building.

b. Humidistatically Controlled Heating

Twelve years of experience at Shelburne indicates that humidistatically controlled heating can be practically employed to successfully reduce high RH within a building whenever interior temperatures are below 72ºF. Operation of humidistatically controlled systems is very cost-effective because buildings are not heated for human comfort. Rather, interior temperature is increased in small intervals to decrease RH to a desired set point (i.e., 50%). For every 1ºF increase in temperature, RH declines 1.5%. (Operating costs range from 5 to 12 cents per square foot per heating season for similarly constructed buildings that are uninsulated). Because RH is usually below 50% during the winter, the heat will not be activated during cold, dry weather, and the interior building temperature will fall as low as 10ºF. As long as the humidity is below 50%, very low temperatures are safe for painted wood, paper, and other organic and inorganic materials in these buildings and will extend the life of artifacts by slowing chemical deterioration reactions. Care is taken not to handle or move collections artifacts when they are very cold, since some materials and adhesives become quite brittle at cold temperatures and are more susceptible to damaged.

To limit the possibility of significant dimensional changes to wooden artifacts that have seldom been subjected to RH below 40% in Dorset House and Circus Building, the humidistatically controlled heating system will be set to gradually reduce RH levels to 60% the first year, 55% RH the second year, and 50% RH during the third year. Wooden artifacts will be periodically examined for checking or flaking paint that could result if the RH is reduced too quickly. To protect the wooden artifacts from dangerously low RH during the winter and to reduce utility expenses, Dorset House and Circus Building will not be heated during cold weather when the interior RH drops below the humidity set point.

Similarly, no heat will be introduced into the textile storage areas of Vermont House and Pierce Shed. Because some artifacts (such as paintings on canvas) could be damaged by low temperatures, a humidifier will be installed to maintain an RH of at least 40% in Vermont House galleries when the building is heated and open to the public during the late fall. Because Shelburne Museum is closed to the public during the winter, low temperatures will not adversely affect programming. Over the past few

years, education programs that formerly were held after the Museum was closed to the public have been moved to regular Museum hours in September, October and May.

c. Humidistatically Controlled Air Conditioning

As with the past two NEH-sponsored projects, Shelburne proposes an innovative new environmental improvement system based on proven technology and experience that is less expensive to purchase, install, and operate than conventional museum environmental mitigation systems presently in use. The proposed system is humidistatically controlled air conditioning. This practical climate control method has been developed and tested at Shelburne Museum over the past 10 years. It was first employed to successfully reduce high summer humidity levels to below 60% in large exhibit cases, then in small and large storage rooms and the Conservation Laboratory, and finally in a 3,200 square-foot Decorative Arts Storage building in 2003 (see D(2)(k) Previous Experience with Methodology and Systems).

It is generally accepted that reducing high RH to the recognized museum standard level of 50% in the summer when interior temperatures are above 72ºF requires commercial air conditioning systems that cool the air to below the dew point (usually around 56ºF) and then reheat the air before it enters the galleries. This means operating cooling and heating at the same time, which is expensive and wasteful.

While operating such systems at Shelburne, it was noted that AC units could reduce the RH to around 60% even if the reheat coil was not operating. Once the building cooled to set point (72ºF), however, the AC unit would turn off and the RH would begin to increase. Engineer Ernest Conrad of Landmark Facilities Group confirmed that undersized cooling coils running constantly during hot and humid weather could indeed effectively dehumidify to around 60% without mechanical reheat. Because 60% is now considered safe for most museum artifacts, properly controlled humidistatically controlled air conditioning is a viable option.

Keys to successful humidistatically controlled air conditioning are:

- using a humidistat instead of a thermostat to activate the cooling unit,
- undersizing a cooling coil so it will run continually during warm, humid weather, maximizing dehumidification without cooling the building below the set point of 72ºF,
- ensuring that the building is well sealed and insulated to minimize moisture infiltration, and
- providing a humidity buffer (such as dense-packed cellulose insulation) that will absorb moisture under damp conditions and release moisture in dry conditions, thereby mitigating humidity fluctuations by passively controlling humidity levels within the building.

Mr. Conrad will design the cooling systems to ensure maximum dehumidification. Fred Lugano of Lake Construction Ltd. Co. will advise on insulating and tightly sealing the buildings. Monitoring data showing the effectiveness of humidistatically controlled air conditioning are presented in Decorative Arts Storage Climate Notebook Engineers Reports [**Appendix 8A**].

d. Improved Exhibit Lighting

All fluorescent lights in Dorset House will be removed from the cases and replaced with LED Illuminating Assemblies (LIA) manufactured by Prolume. During the present exhibit lighting upgrade (supported by NEH), Shelburne Museum investigated numerous lighting devices for exhibit cases: MR16 quartz halogen lights and PAR tungsten lights mounted in case light-attics, miniature fluorescent lights, miniature Xenon track lights, two different fiber optic systems, and two different LED systems.

Prolume's LIA light was the only system that proved safe to use inside cases to illuminate such sensitive artifacts as textiles and paper. These LED lighting fixtures are ideal because they emit a pleasing yellow/white light (approximately 3,200ºK), are small and easy to mount, emit very little heat, are housed in UV-filtering polycarbonate Fresnel lenses, use 30% of the energy of fluorescent lights, and emit light

for 25+ years. Shelburne conservators have worked closely with Prolume's owner and the LIA designer to improve the LIAs so they are dimmable and directionally adjustable, and additional improvements are anticipated within the next year.

LIAs are much less expensive than fiber optics and are already competitively priced with the initial cost of small T5 fluorescent lights. In addition, there are no replacement bulb costs for LIAs. Prices continue to decline as LED technology and availability improves. LIAs have been successfully used to illuminate over 300 of Shelburne's important dolls and automatons recently reinstalled in the Variety unit. Photos comparing the decoy cases in Dorset House lit with bright fluorescent fixtures and the new LIA-lit doll cases in Variety Unit are included at **Appendix 1B**.

In order to mount LIAs in Dorset House, existing exhibit cases must be modified. Large sheets of plate glass covering the cases are safety hazards and will be replaced with Plexiglas. Glass shelves supporting the decoys will be replaced with solid shelves constructed of an inert material so that LIA lighting can be mounted on the bottom of each shelf to illuminate artifacts below. Product information for the LED Illuminating Assembly is at **Appendix 5G**.

The 1,000 feet of T12 fluorescent lighting in Circus Building will be replaced with 250 feet of efficient, dimmable T8 fluorescent lights with UV filters. A low-voltage track light system will be installed to light the carousel horses and circus posters. Circus posters will be matted and framed to protect them from insect damage in such a manner that allows for easy rotation of posters.

e. New Electrical Wiring and Motion Sensors for Exhibit Lights

New electrical wiring will be required for the exhibit lighting and HVAC equipment in Dorset House, Circus Building, and Vermont House. Because such wiring accounts for over 80% of electrical wiring in the buildings, it is reasonable to rewire the entire building to current electrical codes, thereby significantly reducing the risk of fire from old light ballasts, wires, and connectors.

Case lights will be controlled by motion sensors. If a building is empty for 15 minutes, case lights will automatically turn off and then reactivate when a visitor enters. We anticipate that this could decrease artifact light exposure by 25% and save a similar amount in energy costs. Product information for the motion-sensing activation device is at **Appendix 5G**.

f. Filtering and Blocking Natural Light and Ultraviolet Radiation

A major environmental improvement for Electra Havemeyer Webb Memorial Building under this project is the purchase and installation of interior storm windows made of bronze-tinted Plexiglas sheets that filter out all UV radiation and 60% of visible light. In addition to reducing visible and UV light to safe levels, interior storm windows will help to insulate the single-pane historic windows and reduce HVAC operating costs. In Dorset House and Circus Building, it will be necessary to significantly decrease the natural light entering through windows in order to maintain safe, low light levels inside decoy and circus parade exhibit cases. Our experience from lighting dolls in Variety Unit indicates that ambient light in the room has to be lower than the light in the cases to minimize distracting reflections in the Plexiglas/glass case doors. Additional tinting will also be required on Vermont House windows. Roll-down light-blocking shades will be installed on those windows and closed when the buildings are closed.

g. Fire Detection and Security Upgrades

A new Radionics centralized fire and intrusion alarm system serving all Museum buildings and reporting alarms to Protection Services was installed as part of the NEH-sponsored project now nearing

completion. Fire detection devices and motion sensors were upgraded only within the six identified project buildings. All collection buildings have at least heat-activated fire sensors, and buildings that are heated year-round also have standard smoke sensors. However, heat sensors detect a fire only after it is well established, and conventional smoke alarms do not work in cold buildings. Installation of Very Early Smoke Detection and Alarm (VESDA) systems that continuously "sniff out" pre-combustion gases allow detection of smoldering fires before they burst into flame, even in cold buildings. Such early notice allows 24-hour security personnel to locate and extinguish fires in a very early stage. Product literature on VESDA is included at **Appendix 5E**.

Shelburne Museum currently has five operating VESDA systems, and we propose adding four more under this project. Aging motion-sensing anti-intrusion devices would also be upgraded in Dorset House, Circus Building, Vermont House, and EHW Memorial Building. Protection Services personnel have been thoroughly trained to operate and monitor the equipment and are very familiar with the new Radionics Fire and Security Detection system and the VESDA systems nearing completion. Because the proposal involves simply adding more of the same devices to report over the existing central system, we anticipate no problems integrating the expanded systems into our operation.

Exterior security lighting will also be extended to these four buildings. Night security lighting at the Museum presently consists of several very bright lights mounted at eye level bathing portions of the lawns and selected buildings with bright light while leaving others dark. This lighting creates heavy shadows where intruders could hide while destroying Protection Services officers' night vision. A better method is to dimly light the four sides of each building with low-wattage floodlights mounted at ground level. Lighting mock-ups proved that officers could better detect intruders as they approached softly lit buildings and could better navigate and observe the entire site because no bright lights would interfere with their night vision. Heavy vegetation close to the buildings will also be removed to minimize hiding areas for intruders close to the collection buildings.

h. Additional Environmental Improvement Actions

A few promising environmental improvement actions not originally anticipated have been identified while working on previous collection environmental and protection upgrades:

- Water entering the basement of Stagecoach Inn, the Museum's premier folk art gallery, for the past 25 years has proven very difficult to control. A recent engineering study has finally identified the source of water infiltration and proposed installation of a curtain drain to solve the problem. Downspouts installed on the Horseshoe Barn, which houses the country's best collection of horse-drawn vehicles, have not been connected to the storm drain system because of the requirement for specialized groundwork. This could be completed with the Stagecoach Inn drainage work.
- LED lighting for the doll cases in Variety Unit is a significant improvement over the old fluorescent lights. However, light exposure on sensitive doll costumes could be even further reduced by installing motion-activated timers to turn off case lights when no one is in the gallery.
- A VESDA fire detection apparatus and additional motion sensors are required for the administration building that houses the telephone system over which the security/fire detection system communicates.

i. Improved Energy Efficiency

Shelburne Museum will work closely with Efficiency Vermont, a state public utility, to ensure that any new climate control equipment or lighting is the most efficient available. Efficiency Vermont has advised on similar projects in the past, and Shelburne has received cash incentives to pursue innovative energy-saving technologies. In Dorset House and Circus Building, it is anticipated that the cost of

operating new climate control systems will be at least partially offset by electricity savings from more efficient lighting systems, which use one-third the electricity of existing fluorescent lights. In Vermont House, four window air conditioners will be replaced by an efficient central cooling system. Because the heating system will also be more efficient, we do not expect operating costs to increase appreciably. Insulating EHW Memorial Building should significantly reduce heating and cooling costs as well as the cost of operating a large electric humidifier.

j. Impact of Environmental Improvements for Artifacts on Historic and Purpose-built Collection Buildings

In accordance with the well-considered principals outlined in the New Orleans Charter for Joint Preservation of Historic Structures and Artifacts, **[Appendix 9E]**, environmental improvements for collections housed in Shelburne Museum's historic buildings are designed to enhance the long-term preservation of both the artifacts and the buildings that house them. In fact, Shelburne's development of various practical climate control methods was guided by participation in the 1990 Montreal symposium on Museums in Historic Buildings, where the project director helped draft the document that later became the New Orleans Charter.

Allowing a historic structure to remain cold during the winter in order to maintain safe humidity levels for the collection it contains rather than heating and humidifying the building is a good example of balancing building and artifact preservation. Introducing excessive moisture into a heated historic structure that does not have a vapor barrier in the walls could lead to water condensing in wall cavities during cold winter weather, eventually destroying the building. Heating the building to keep it dry during the winter could result in extremely low RH levels that harm artifacts made of organic materials (such as wood, paper, ivory, and textiles). Every environmental improvement action that improves conditions for collection artifacts – from installation of interior storm windows to installation of heating and cooling ducts – is carefully considered from the point of view of disruption of the original building fabric.

A primary advantage of the VESDA is that air from a room is sampled through a very small tube leading from each room to a sensor hidden in a closet or basement. No smoke or heat detectors are mounted on ceilings or walls in historic rooms. Although each environmental improvement usually involves some degree of compromise for either the building or the artifacts, efforts are made to balance these compromises so that, when considered as a whole, neither the long-term preservation of the artifacts or the building is significantly compromised.

A letter from the state historic preservation officer indicating that the previous NEH project, that implemented environmental improvements and fire and security related improvements in 6 historic structures at Shelburne Museum, had no deleterious effects on the historic fabric of the buildings is attached at **Appendix 15**. We anticipate a similar opinion concerning the improvements proposed for the two historic buildings included in this project.

k. Previous Experience with Methodology and Systems

The various methods and procedures proposed to stabilize the collections in four additional buildings have been implemented and proven in two successful NEH sponsored projects completed at Shelburne Museum in the past 12 years. The same project director and project manager who successfully guided the first two projects are proposed for this third project. The proposed project is a combination of many of the environmental improvement actions carried out during the first two projects and applied to four additional important collection buildings.

The first project: 1) reduced the moisture impact on collection buildings and installed complete HVAC systems in three major galleries in historic buildings, 2) humidistatically controlled heating and ventilation systems in three historic houses, and 3) humidistatically controlled ventilation systems in 10 barns or smaller barn-like structures. The second project: 1) updated the Museum's fire and security detection system, 2) installed sensitive VESDA devices in four key collection buildings, 3) upgraded building wiring and lighting in six structures, and 4) filtered natural light entering collection spaces.

In 2003, the Institute for Museum and Library Services funded a project to install humidistatically controlled air conditioning in Shelburne Museum's 3,600 square-foot Decorative Arts Storage building. That building was a wooden shell with only a large whole-building fan that exhausted hot air from the second floor during the summer. Temperature and humidity reached 90ºF and 90%RH during a typical summer, and artifacts were very dusty from the large amounts of air being drawn through the building during hot weather.

Environmental improvements included removing all the artifacts, super-insulating the building using dense-packed cellulose insulation, and tightly sealing the building against moisture infiltration. A state-of-the-art residential heating and cooling system was installed and operated by the existing museum digital control system (Johnson Control) to reduce RH by heating the interior space in cool weather and by cooling the interior air during warm weather. Both heat and air conditioning are activated by humidistats rather than thermostats. When the building temperature is below the 72ºF set point, heat is activated whenever humidity exceeds the set point of 50%. If the building temperature is above 72º, the air conditioning is activated whenever the humidity exceeds the set point of 50%.

Because manufacturers of residential cooling equipment now realize that people can be more comfortable at higher temperatures if humidity is removed from the air, they are beginning to use more affordable digital technology to control the speed of air flowing over the cooling coil, thereby maximizing dehumidification (see product literature at Appendix 5A). This system is working very well during its first summer, keeping the building RH around 60% and the temperature below 70ºF while operating at low fan speed and low cooling levels (15,000 BTU for a 14 SEER AC unit).

Temperature/RH monitoring data indicates that the system is operating very well to maintain target RH levels above 35% in the winter and below 60% the rest of the year. In fact, humidity levels for the dampest part of the year (between March and October) have been significantly improved [see comparison of these months before and after operation of Humidistatically Controlled Air Conditioning – Decorative Arts Storage, Climate Notebook Engineers Reports at **Appendix 8A**]. Installation costs are estimated at about 50% of the cost of a traditional commercial museum-quality HVAC system, and operation costs are very low. We intend to use this cost-effective adapted technology in Dutton House, Circus Building, and storage areas of Vermont House/Pierce Shed.

E. Work Plan

This project proposes various combinations of the following improvements to four more important collection buildings: insulating buildings, taking practical actions to control humidity inside collection buildings, installing practical climate control systems, maximizing security detection systems, installing VESDA devices, upgrading building wiring, installing new exhibit lighting, and significantly filtering natural light entering collection spaces. We are confident that this project will significantly improve conditions for the artifacts exhibited and stored in the selected buildings. We have made great progress over the past 12 years, and this project continues our plan to apply practical environmental "fixes" to all collection buildings.

The Work Plan [attached at **Appendix 2**] details specific tasks to be performed in each building over a period of three years and six months. System design and contractor selection will be facilitated by

the fact that similar systems have been installed in many Shelburne Museum buildings over the past 10 years.

Collections assistants will photograph existing installations to document artifact positions. Object movement will be planned, coordinated, and supervised by the collections manager and registrar. Objects will be moved by specially trained collections assistants who routinely clean and move artifacts between buildings. Collections assistants will pack and move artifacts to a safe, environmentally controlled storage, following the *Collections Management Artifact Movement Plan* at Appendix 5G. Staff conservators are available to advise on safe artifact handling methods.

Experience indicates that safe storage locations for artifacts are available at the Museum for clearing one collection building at a time. It is not anticipated that it will be necessary to completely clear storage areas simply to cut small holes in the ceiling for air vents. However, artifacts will be moved away from the isolated work areas, sometimes to other rooms in the same building, and properly protected. Similarly, it will not be necessary to completely remove the contents from the EHW Memorial Building to insulate the outside wall and install light-filtering interior storm windows. Artifacts will have to be removed from the rooms where work is being performed, but they can be stored in other safe areas of the same building that are not being worked on.

The project manager will schedule contracted tradesmen to insulate buildings and install new electrical wiring, environmental equipment, motion detectors, and the VESDA system and monitor and facilitate all installations. The project manager will remove room moldings and floorboards as required to access wall cavities for HVAC ducts, wires, VESDA sampling tubes, and insulation as required. Following advice from curators and conservators, he will work with the preservation carpenters, the Museum systems maintenance technician, and outside contractors to ensure that historic building fabric is protected.

The project director and project manager will work together to ensure that each system is properly balanced, tested, and commissioned by the appropriate contracted system specialists to the satisfaction of Shelburne Museum before it is accepted. Curators, educators, and conservators will work together to reinterpret the exhibits. The exhibit preparator, carpenters, and painters will transform the exhibits. Collections assistants will move artifacts back into the buildings. The project director, a trained conservator, will monitor and troubleshoot climate control system on an ongoing basis, insuring that the systems are working properly before artifacts are reinstalled. Preventive maintenance and annual testing of all systems will be conducted by the staff systems maintenance technician (a licensed electrician) in conjunction with contracted specific system maintenance personnel.

F. Staff

			Average % over 3 ½ Year Project
Project Director			
Director of Preservation and Conservation	-	Richard Kerschner	(20%)
Director of Buildings Preservation	-	Bob Furrer	(20%)
Exhibit Preparator	-	Doug Oaks	(33%)
Curator (1 position total)	-	Henry Joyce	(40%)
Project Manager	-	David Furlong	(100%)
Project Carpenter	-	Lauren Cox	(50%)
Support Carpenter	-	Chris Kent	(60%)
Electrician	-	Rick Gage	(25%)
Painter (1 position total)	-	Donna Kennedy	(90%)
Groundskeeper	-	Kevin Welsh	(5%)

Collections Manager	-	Cathi Comar	(15%)
Registrar	-	Barbara Rathburn	(15%)
Collections Assistants	-	Russ Symons	(15%)
Museum Educator	-	Cathy Wood Brooks	(13%)

Consultants

Nick Artim	-	Fire Detection/Suppression Consultant	Fee included in VESDA estimates
Fred Lugano	-	Insulating Consultant	Fee included in Insulating estimates
Ernest Conrad	-	HVAC Engineer	$5,000/building

Resumes for staff with major responsibilities for the project's implementation and consultants are included at **Appendix 10**. Job descriptions for the two project-specific positions are included at **Appendix 11.**

Richard Kerschner, Project Director, will be responsible for the overall management of the project implementation and project reporting. Mr. Kerschner has successfully served as project director for Shelburne Museum's NEH-sponsored Environmental Improvement Project (EIP) and the NEH-sponsored Fire and Security Detection, Lighting and Wiring Improvement Project (FSLIP) and is thoroughly familiar with directing implementation of this type of project. He will meet with the Museum President on a regular basis to keep her updated on project progress and insure that adequate institutional support is devoted to project implementation. He will work directly with the project manager, director of buildings preservation, and exhibit preparator, to ensure that the project is progressing on schedule, and advise on selection and installation of HVAC, VESDA, and lighting systems. He will coordinate with the collections manager on artifact moves and offer artifact handling advice. He will work closely with the Comptroller to monitor project spending. Kerschner will interface with consultants as required. He will hold monthly coordination meetings with the entire NEH project team, insure effort reporting is maintained, and write interim and final project reports.

Bob Furrer, Director of Buildings Preservation, will oversee installation of the various systems within the selected buildings and coordinate closely with the project director. He will supervise the project manager, and administer the letting of contracts. The project and staff carpenters, painters, and the groundskeeper all work within his department. Mr. Furrer has in-depth experience managing capital improvement projects at Shelburne Museum and served in a similar position for the NEH FSLIP and several other large and complex capital improvements projects.

David Furlong, Project Manager, will be dedicated exclusively to this project. He will be involved in all aspects of project management including scheduling and coordinating contractor activities, control of access to facilities, and liaison with the Director of Buildings Preservation, project consultants, and other Museum staff assisting with the building upgrades. He will be a hands-on manager, installing shelves and positioning lights in exhibit cases, opening walls and floors and pulling wires and sampling tubes through particularly sensitive areas of the historic structures. Mr. Furlong has been project manager for both the NEH-sponsored EIP and the NEH-sponsored FSLIP and is thoroughly familiar with managing implementation of this type of project.

Henry Joyce, Chief Curator, will lead the program to reinterpret the collections in each of the project buildings. He will work with the other curators and educators to select and interpret artifacts for exhibit. Mr. Joyce's new and extensive labels and special interpretation projects have been a central part of the reinterpreted exhibitions in previous NEH project buildings. As in the past, his research on the collections will also lead to museum publications and scholarly articles on the collections studied.

Doug Oaks, Exhibit Preparator, will work closely with the curators to upgrade aging exhibits. He will redesign exhibit cases, and purchase and install light-filtering interior storm windows where required. He will consult with conservators to select appropriate lighting fixtures and bulbs, aim lights, and set safe light levels. He will manufacture new exhibit labels. Curators, educators, and the Exhibit Preparator will work together to reinterpret and upgrade the exhibits to be reinstalled in each building.

Museum carpenters will upgrade exhibit cases and shelves. The Project Carpenter will provide access behind walls and within floors as required, ensuring that the historic building fabric is not compromised and modifications are properly documented. Carpenters and painters will upgrade the exhibits according to plans prepared by the curators and the Exhibit Preparator. Curatorial reinterpretation and exhibit upgrades not directly associated with environmental improvements will be credited as part of the Museum's matching effort. Public relations personnel will inform the public about the improved access to collections that have seen few improvements in 50 years.

Previous NEH- and IMLS-sponsored projects have required extensive assessment and planning, and the Museum has been guided by the following consultants: Ernest Conrad of Landmark Facilities Group, museum environment engineer; Steve Keller, museum security consultant; Nick Artim, museum fire prevention consultant; Kit Cuttle, museum lighting consultant; Steve Hefferan, museum lighting consultant. The two consultants who advised on HVAC and fire detection for previous projects will also consult on the proposed project. Because we propose installing or extending security and lighting systems similar to those already proven effective, it should not be necessary to employ security and lighting consultants for this project. A third consultant, Fred Lugano, will advise on effectively insulating and sealing collection buildings.

Ernest Conrad, Principal Engineer of Landmark Facilities Group, has a national reputation for designing HVAC systems for museums and historic buildings. He has worked closely with the Project Director for the past 13 years to design innovative and practical climate control systems for Shelburne Museum's collections buildings and historic house museums throughout the US. Nick Artim, Director of Fire Safety Network is also known nationally for advising on fire detection and suppression for heritage buildings. He will design the VESDA systems for the project buildings. Fred Lugano is in expert in insulating buildings with dense-packed cellulose.

VI. TABLE OF APPENDICIES

B. *Implementation of Practical Climate Control Strategies at the Shelburne Museum* by Richard L. Kerschner
C. *Relative Humidity and Temperature Guidelines: What's Happening* by Stefan Michalski
D. *Relative Humidity Re-Examined* by David Erhardt and Marion Mecklenburg
E. *New Orleans Charter: Forging a Strategy to Preserve Historic Structures and Artifacts* by Herb Stovel

Appendix 10 Resumes for Staff with Major Responsibilities and Project Consultants

Appendix 11 Job Descriptions

Appendix 12 Letters of Support
A. Robert Shaw – Decoy Scholar
B. Kristen Spangenberg – Curator of Prints, Drawings. and Photographs, Cincinnati Art Museum
C. John Wilmerding – Sarofim Professor of American Art, Princeton University

Appendix 13 Letter for State Historic Preservation Officer

Appendix 14 Shelburne Museum Publications inspired by previous NEH Preservation and Access Projects

THE DOLLS OF SHELBURNE MUSEUM
ART OF THE NEEDLE: 100 MASTERPIECE QUILTS FROM THE SHELBURNE MUSEUM
American Folk Art at the Shelburne Museum

Appendix 15 *Shelburne Museum – A Guide to the Collections*

History of Grants
List of Project Consultants

Application Cover Sheet
List of Suggested Evaluators

Fluorescent Lit Decoy Cases vs. LIA Lit Doll Cases

Stagecoach Inn Engineering Plan

Photos of Artifact Deterioration:
a. Circus Posters
b. Circus Parade Flaking Paint, Broken Reins, and Light-damaged Flags
c. Corroding Metal on Decoys
d. Darkening Varnish on Carousel Animals and Decoys
e. Splits in Wood Secretary and Warped Table

Product Literature

a. Dense-packed Cellulose Insulation
b. American Standard Heating and Cooling Unit
c. Prolume LED Illuminating Assembly
d. Motion Sensing Light Activator