



Standards, Guidelines, and the Preservation Process

Figure 1. Sandbags are used to protect Cape Hatteras Lighthouse, Buxton, North Carolina, from further shoreline erosion.

Levels of Treatment According to the Secretary of the Interior's Standards for the Treatment of Historic Properties (1995)

The Secretary of the Interior is responsible for establishing professional standards and providing advice on the preservation and protection of all cultural resources listed in or determined eligible for listing in the National Register of Historic Places. The first standards developed to fulfill this responsibility were published in 1976—the *Secretary of the Interior's Standards for Historic Preservation Projects*. These consisted of seven sets of standards for the acquisition, protection, stabilization, preservation, rehabilitation, restoration, and reconstruction of historic buildings.

Since their publication in 1976, the *Secretary's Standards* have been used by State Historic Preservation Officers and the National Park Service to ensure that projects receiving federal money or tax benefits were reviewed in a consistent manner nationwide. The principles embodied in the *Standards* have also been adopted by hundreds of preservation commissions across the country in local

design guidelines. The *Standards* also apply to all proposed development grant-in-aid projects assisted through the National Historic Preservation Fund.

In 1992 the *Standards* were revised so they could be applied to all historic resource types included in the National Register of Historic Places—buildings, structures, sites, objects, districts, and landscapes.¹ The revised standards were reduced to four sets by incorporating *protection* and *stabilization* into *preservation*, and by eliminating *acquisition*, which is no longer considered a treatment.

The Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings (1995) also replaced the *Guidelines* that were published in 1979 to accompany the earlier *Standards*, and address four distinct, but interrelated, approaches to the treatment of historic

¹Retitled *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, this new, modified version was codified as 36 CFR Part 68 in the July 12, 1995, *Federal Register* (Vol. 60, No. 133) with an "effective" date of August 11, 1995. The revision replaces the 1978 and 1983 versions of 36 CFR 68 entitled, "The Secretary of the Interior's Standards for Historic Preservation Projects."

properties: *preservation*, *rehabilitation*, *restoration*, and *reconstruction*.

Of the four, *preservation* standards require retention of the greatest amount of historic fabric and focus on the maintenance and repair of existing historic materials. It includes retention of a property's form, features, and details as they have evolved over time. *Protection* and *stabilization* have been consolidated under this treatment.

Rehabilitation standards acknowledge the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character. *Restoration* standards allow for the depiction of a property at a particular period of time in its history by preserving materials from the period of significance and removing evidence of other periods. *Reconstruction* standards establish a framework for recreating vanished or non-surviving portions of a property with new materials, primarily for interpretive purposes.

The Secretary of the Interior's Standards for the Treatment of Historic Properties may be used by anyone planning and undertaking work on historic properties, even if grant-in-aid funds are not being sought. They are regulatory only for projects receiving federal grant-in-aid funds; otherwise, they are intended only as general guidance for work on any historic building. Historic lighthouse owners, tenants, stewards and managers, preservation planners, historical architects and engineers, contractors, and project reviewers would all benefit from guidance contained in the *Standards* during the planning and implementation of project work.

It should be noted that another regulation, 36 CFR Part 67, focuses on "certified historic structures" as defined by the IRS Code of 1986. The "Standards for

Rehabilitation" cited in 36 CFR 67 should always be used when property owners are seeking certification for Federal tax benefits.

In summary, the simplification and sharpened focus of this revised set of treatment standards is intended to assist users in making sound historic preservation decisions. Choosing an appropriate treatment for a historic property is critical. This choice always depends on a variety of factors, including the property's historical significance, physical condition, proposed use, and intended interpretation.

Preservation

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses on the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Preservation as a Treatment Philosophy: *Preservation* may be considered as a treatment when the property's distinctive materials, features, and spaces are essentially intact and thus convey the historic significance without extensive repair or replacement; when depiction at a particular period of time is not appropriate; and when a continuing or new use does not require additions or extensive alterations. Before undertaking work, a documentation plan for *preservation* should be developed.

The Secretary of the Interior's Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

(See Part IV. **Historic Lighthouse Preservation** in this Handbook for illustrations on how to apply preservation treatments to historic lighthouses in a way that meets the standards.)

General Guidelines for the Preservation Planning Process

Careful planning before treatment can help prevent irrevocable damage to a historic lighthouse. Professional techniques for identifying, documenting, and treating historic lighthouses are continually being refined. The preservation planning process for historic lighthouses should involve: historical research; identification of character-defining features; documentation of existing conditions; condition assessment and analysis; development of a strategy for ongoing maintenance, protection and/or stabilization; special requirements such as accessibility, health and safety considerations, and energy efficiency (sustainability); and preparation of a record of treatment which documents actual work accomplished as part of any preservation project.

Historical Research

Before undertaking project work, research should be conducted to determine if the lighthouse is historically significant (see "What Makes a Lighthouse Historic" under Part I). Research findings help to identify a light station's historic period(s) of ownership and occupancy, expansion and contraction, and bring greater understanding of the significant associations. Research findings also

provide the foundation to make educated decisions for project treatment, and can guide management, maintenance, and interpretation. In addition, research findings may be useful in satisfying compliance reviews, e.g., Section 106 of the National Historic Preservation Act as amended. Most primary records on U.S. lighthouses are housed in the National Archives. For a description of these records, see Part VI., **Resources**.

Identification of Character-Defining Features

The *Secretary of the Interior's Standards for Preservation* embody two important goals: 1) the preservation of historic materials, and 2) the preservation of a building or structure's distinguishing character. Every historic lighthouse is unique, with its own identity and its own distinctive character. Character refers to all those visual aspects and physical features that comprise the appearance of every historic structure. Character-defining features include elements such as the overall shape of the lighthouse structure/building, its materials, craftsmanship, decorative details, interior spaces and features, as well as various aspects of its site and environment.

If the various materials, features, and spaces that give the lighthouse its visual character are not recognized and preserved, then essential aspects of its character may be damaged in the process of change. The character of a historic lighthouse can be changed or damaged in many ways: for example, by inappropriate repointing of the brickwork, or the application of a coating over the brick surfaces, by removal of a distinctive entry way, by changes to the window sash or lantern glazing, by removal of the classical lens, by changes to the exterior such as changing the daymark, or by the introduction of new elements such as modern radar or electrical equipment, or the addition of chain link fences to replace historic fencing types, etc.

A three-step process has been developed by the National Park Service that can be used by anyone to identify those materials, features, and spaces that contribute to the visual character of a historic lighthouse and its environs. Step one, examine the structure from afar to understand its overall setting and architectural context; step two, move up very close to appreciate its

materials and the craftsmanship and surface finishes evident in these materials; step three, go into and through the structure to perceive those spaces, rooms, and details that comprise its interior visual character.

For examples of character-defining features that are typically found associated with historic lighthouses, see the section on identifying character-defining features in the Introduction to Part IV., **Historic Lighthouse Preservation**.

Documentation of Existing Conditions

The goal of documentation is to provide a record of the lighthouse as it exists at the present time, thus providing a baseline from which to operate. All character-defining features that contribute to the lighthouse's historic character should be recorded. The level of documentation needed depends on the nature and significance of the lighthouse. A building should be documented before any inventory, stabilization, or investigative work in order to record crucial material evidence.

A simple, comprehensive method is to take 35mm photographs of all sides of the structure (interior and exterior), as well as general views, and typical and unusual details. The systematic numbering of levels, rooms, windows, and doors on the floor plan will help organize this task and also be useful for labelling the photographs. It is also useful to establish the relative size of the features by including a scale-setting device in the photo field. A common scaling device is the "scale bar," a four- to six-foot-long rectangular bar, approximately one foot in width, with black and white alternating one-foot increments. Color-print and black-and-white film are recommended over slide film for the archival stability. Video coverage with annotated sound may supplement still photographs. Additional

methods of documentation include written descriptions, sketches, inspections, and measured drawings.

Significant structures, such as National Historic Landmarks or individually listed National Register properties, could benefit from professional large format photographic documentation and accurate measured drawings. Professionals frequently refer to *The Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation; the HABS/HAER Standards (Historic American Buildings Survey/ Historic American Engineering Record)*. Remember that the documents created during investigation may play an unforeseen role in future treatment and interpretation.

Documentation is particularly valuable when a feature will be removed, altered, or lost.

The documentation process can be quite extensive if the budget allows; if funds are limited, there are rudimentary alternatives. Throughout the country there are architectural, engineering, and preservation firms that specialize in historic documentation and research. For a listing of firms in your vicinity contact your State Historic Preservation Officer. The work performed by these firms can cover a wide range of products. At minimum a site visit report can be made after a one-day site visit

that produces a series of documentation photographs and a written description of the historic and character-defining features of the structure. The ultimate documentation of a historic lighthouse would be a historic structure report that may involve a complete history of the structure, development chronology of the structure, paint analysis, inspection of interior wall cavities with a boroscope, extensive materials testing, large format photography, and collection of historic photographs.

If the budget does not allow for this type of extensive documentation, certain minimum documentation should be performed before any work is undertaken. Black-and-white photographs should be taken of all elevations of the lighthouse as well as character-defining details such as deck brackets, door and window surrounds; lantern elements and equipment; interior features such as wall surfaces and staircases; and any architectural millwork such as chair rail, baseboard, etc. These photographs will document the pre-existing conditions of the lighthouse and serve as a record for future work. Each photograph should be accompanied by a written description of the image. The photographs and descriptions should be archived together with all known information about the lighthouse, such as maintenance records, any historical research already performed, etc.

SIDEBAR: Documenting Historic Lighthouses by the Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER)

In many cases, the first step in the preservation of a lighthouse, or any historic property, is documentation. The existing site should be recorded with drawings, photographs and historical and descriptive reports to define the characteristics and significance of that site. The HABS/HAER program of the National Park Service was created in 1933 to develop this type of documentation, establishing a standardized collection of the American-built environment, held for perpetuity within the Prints and Photographs Division of the Library of Congress. All materials are produced to

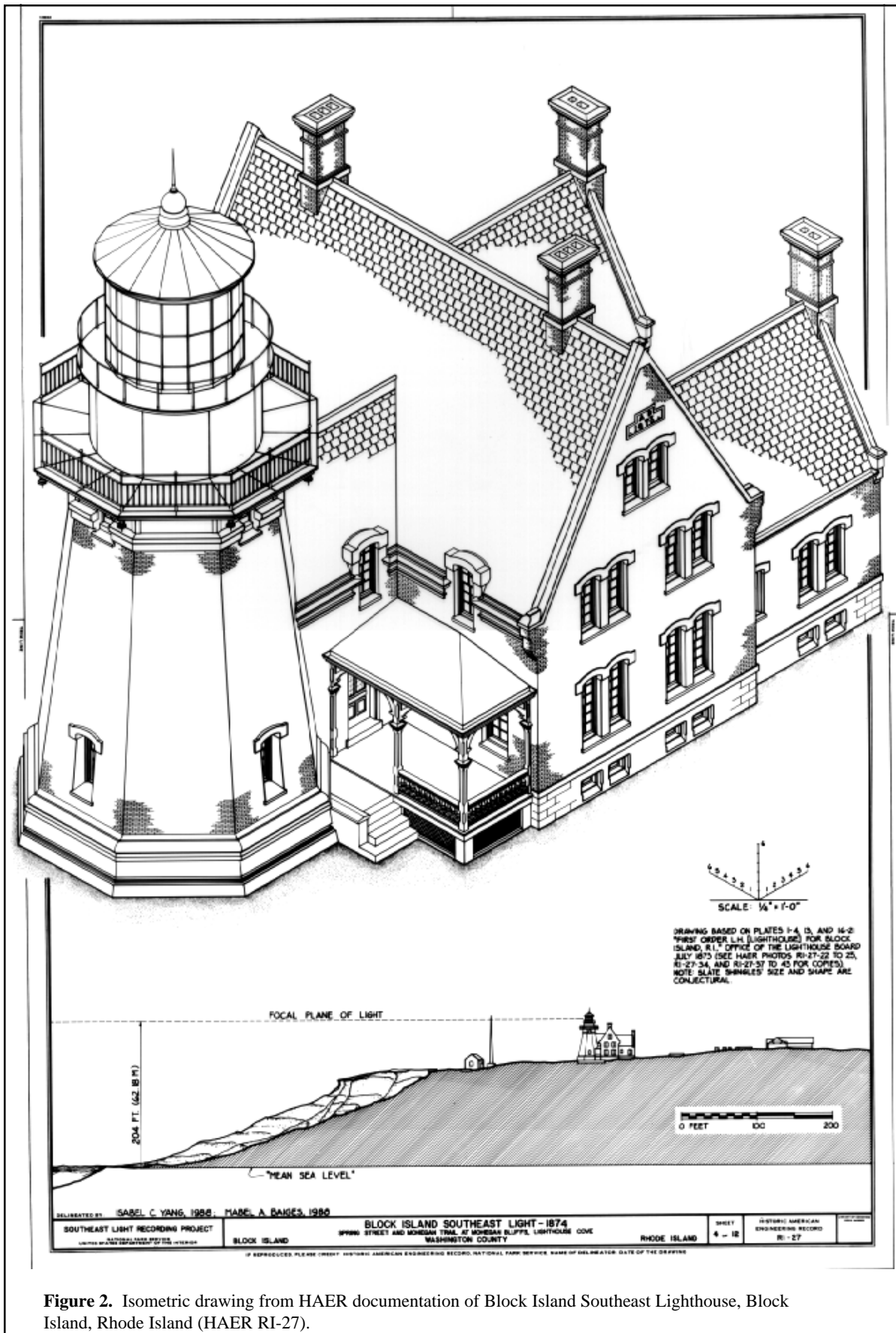


Figure 2. Isometric drawing from HAER documentation of Block Island Southeast Lighthouse, Block Island, Rhode Island (HAER RI-27).

archival standards and specific formats that assure a consistent product throughout the collection. This collection is available to the public and reproductions of the records can be obtained.

HABS/HAER documentation is usually in the form of measured drawings, photographs, and written data. The kind and amount of documentation should be appropriate to the nature and significance of the lighthouse being documented. Level I documentation, which is generally required for nationally significant properties, includes a full set of measured drawings depicting existing or historic conditions, photographs with large-format negatives of exterior and interior views, large format negatives of photocopies of select existing drawings or historic views where available, and a written history and description. Level II documentation differs from Level I by substituting copies of existing drawings, either original or alteration drawings, for recently executed measured drawings. Level III documentation substitutes a sketch plan with an architectural data form explaining what is not readily visible in the photographs and Level IV documentation consists solely of completed HABS/HAER inventory cards.

The HABS and HAER programs vary slightly in the process by which a site is recorded. HABS generally focuses on architectural features and prepares documentation that reflects the “as is” existing condition of a site with historical background information in a written format. Little notation is made on the drawings. HAER generally focuses on engineering principles and industrial structures, and prepares a record that interprets the site for its significant engineering or function. Often, the interpretive drawings utilize existing documents as a basis for the measurements rather than measuring the structure in the field; the objective is to interpret a concept, not necessarily an existing condition, so that the structure can be rebuilt exactly in all its historic details.

The documentary record can explain the form or function of lighthouses using a variety of graphic techniques. The basic drawing includes measured elevations, plans, and sections. More intricate interpretive drawings use axonometric techniques to explain the three-dimensional forms and arrangement of parts. These include planometrics (a rotated plan with vertical elements projected from it), or isometric projections which utilize a 30-degree angle in its base axis (see Figure 2). Axonometrics are also used to develop “exploded” or “peel-away” views that illustrate how pieces fit together. Photographs or conceptual information are often translated into illustrations or sketches that further explain a process or character of the structure.

Large-format black-and-white photography is used to capture the actual physical attributes of the structure and express its context in the landscape and relationship to other structures around it. Photography also provides greater textural details of the material’s weathered condition. Written documentation provides the basic data necessary for understanding the site’s development and evolution throughout its working life. Specific descriptive information is recorded, and historical research explains the context, functions, alterations, and theories related to its operation.

Condition Assessment and Analysis

A condition assessment can provide the owner with an accurate overview of the current condition of the property. Architectural investigation is the critical first

step in planning an appropriate treatment—understanding how a building has changed over time and assessing levels of deterioration. If the lighthouse is deteriorated or if there are significant architectural elements that will need special

protection, undertaking a condition assessment is highly recommended, but it need not be exhaustive. Both the purpose and scope of the assessment should be determined before formulating a particular approach. Any maintenance or repair problems should be identified and prioritized.

A modified condition assessment, prepared by an architect or preservation specialist or in some cases a structural engineer, may help set priorities for repairs necessary to stabilize the property for both the short and long term. It will evaluate the age, condition, and quantities of the following major elements: foundations; structural systems; exterior materials and surfaces; roofs and gutters; exterior porches and steps; interior finishes; staircases; plumbing, electrical, mechanical systems; special features such as chimneys; and site drainage. Throughout the country there are architectural, engineering, and preservation firms that specialize in assessing the condition of historic structures. For a listing of firms in your vicinity that specialize in condition assessments, contact your State Historic Preservation Officer.

Condition assessment surveys can, however, be carried out by a maintenance team familiar with the unique qualities of historic lighthouses and their maintenance requirements. Visual surveys will quickly point out any obvious deficiencies to a well-trained eye. Observations can be documented on any standard maintenance survey form or on individually prepared survey forms that are tailored to a specific site.

Strategy for Maintenance

- Identify character defining features
- Prepare feature checklist for condition assessment
- Determine condition: good, fair, poor

- Prioritize maintenance concerns: critical, serious, minor
- Develop a maintenance and monitoring plan
- If appropriate, determine quantities of existing materials for future cost estimates

Maintenance of any structure begins with scheduled inspections and cyclic and routine maintenance. Scheduled inspections are the most basic form of maintenance and are critical in the long-term preservation of a lighthouse structures. The inspection process is a method for identification of maintenance issues and should be carried out on a regular basis (quarterly, semi-annual, annual, every second-, third-, fourth-, or fifth-year cycle). Lighthouse structures are typically located in harsh coastal environments and should be inspected at least annually; if inspection personnel have appropriate preservation skills, it would be cost effective to undertake basic emergency repairs in the field such as securing open doors and windows and performing temporary repairs.

For lighthouse structures which have recently been preserved, comprehensive inspections should be scheduled once every three to five years. Annual visual inspections, and inspections after major weather events would also be recommended. This procedure identifies 'problems' so that treatment can be scheduled during the next maintenance cycle. If the recommended preservation treatments are carried out, the annual maintenance will be routine in nature. Cyclical maintenance planning would allow for three-to-five and ten-year cycles for maintenance activities such as repainting, reglazing, recaulking, etc.

Lighthouses are unique structures in that they were originally constructed to endure severe weather. Because they have survived 80 to 100 years, the uninformed public may assume these structures require little or no upkeep. But lighthouses were

SIDEBAR: Quantities Tracking, Tallying, and Cost Estimating

Cost estimates are frequently requested products of condition assessment projects and are very useful in planning the preservation strategy. Lighthouses are also one of the most difficult building types to estimate. Development of cost estimates for preservation projects is often based on previously completed work. Prices are compiled for various tasks and a database is created. This method is used most often to create cost estimates for proposed or recommended projects, including preservation.

In order to create an estimate, quantities tracking is an essential step. Time should be allocated during regularly scheduled inspections to measure and tally the quantities of materials which make up the lighthouse. Geometric calculations will come into play in the determination of various components and features of any lighthouse given their often circular or conical shape. If any documentary drawings are available for the lighthouse, the recorded dimensions can be used to calculate materials quantities.

Once quantities have been figured, it is possible to proceed with a cost estimate. Cost estimates may be produced in a variety of formats depending on the developmental stage of the project and the needs of the project managers. The following is a description of some of the most common types of cost estimates and their uses.

Many government agencies develop “in-house” estimating guidelines based on previous project work. Conceptual cost estimates, or class “C” estimates are often based on per square foot costs derived from similar construction or identifiable unit costs of similar construction items. These estimates may be prepared without a fully defined scope of work.

There are many considerations in preparing a conceptual estimate, such as job location, materials suppliers, labor availability and wage rates, seasons of construction, difficulty of accessing the structure, geographic areas, and difficulty of terrain.

When preparing an estimate the following information is critical: square footage of the structure and other important dimensional data (how tall, etc.), anticipated site development including existing and proposed utilities, anticipated mechanical and electrical needs, anticipated structural needs, and anticipated construction constraints or unusual site conditions. Given that historic lighthouses are a unique type of structure there are many other factors to be considered. These must be determined on a case-by-case basis.

Other more refined estimates are based on an approved preliminary design. This type of estimate or class “B” is derived from partial lump sum and unit costs. Important information to consider includes: site planning (existing and proposed utilities, grading, planting, etc.); building design (plans, elevations, and sections, plus details of the work); schematic mechanical and electrical systems design (may be in the form of written analysis based on available information); outline specifications including cut sheets of proposed materials, equipment, fixtures or specialty items which may significantly influence the estimate); and initial quantity take-offs for utilities, site, and building systems (civil, landscape architectural and preservation architectural).

The best type of estimate is based on a complete quantity take-off derived from completed construction documents and specifications. This is characterized as a class “A” estimate. This type of estimate is completed when a project is ready to be competitively bid. Support information

should include: final construction drawings and specifications, estimate based on complete quantity take-offs, and a final bid schedule prepared by the architect.

References:

There are many types of estimating guidelines available for general use, this is a list of those most commonly found. Consult your local library or bookstore for others. Keep in mind that lighthouses are unique structures and a certain amount of interpolation may be required.

Walker's Building Estimator's Reference Book (annual updates): *A Reference Book Setting Forth Detailed Procedures and Cost Guidelines for Those Engaged in Estimating Building Trades*, Frank A. Walker Company, Lisle, Illinois

National Construction Estimator (annual updates), Craftsman Book Company, Carlsbad, California

Means Building Construction Cost Data (annual updates), R.S. Means Company, Kingston, Massachusetts

Successful Estimating Methods: From Concept to Bid (First Edition), by John D. Bledsoe, Ph.D., P.E., R.S. Means Company, Kingston, Massachusetts, 1996

also designed for a live-in keeper. A trained professional was on hand everyday to monitor the condition of the structure and perform the daily maintenance and upkeep required at a functioning light. If there was a catastrophic occurrence, the keeper was there to take immediate action and follow through with residual repairs. The keeper was the eyes and ears of the lighthouse. In today's unmanned stations this critical link has been lost. In a sense, the role of the keeper is replicated by the scheduled inspection and cyclic maintenance process.

While every effort may have been made to stabilize the property and to slow the deterioration of materials, natural disasters, storms, undetected leaks, and unwanted intrusion can still occur. A regular schedule for monitoring and maintenance should be established to track these events. The regularly scheduled inspection is also the tool for monitoring recent work and for creating a record of the changes to the structure. It is the primary means for monitoring during the post construction phases of a project. (For more information see the inspection charts provided in Part IV. **Historic Lighthouse Preservation.**)

Special Requirements

Work that must be done to meet accessibility, health and safety, or energy efficiency requirements is usually not part of the overall process of protecting historic lighthouses; rather, this work is assessed for its potential impact on the historic lighthouse.

- **Accessibility requirements:** Modifications to historic lighthouses and associated historic structures are often necessary so that they will be in compliance with current accessibility code requirements. Accessibility to certain historic structures is required by three specific federal laws: the Architectural Barriers Act of 1968, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act (ADA) of 1990. Federal rules, regulations, and standards have been developed which provide guidance on how to accomplish access to historic areas for people with disabilities. Work must be carefully planned and undertaken so that it does not result in the loss of character-defining spaces, features, and finishes. This can be especially challenging given the vertical and confined nature of most lighthouses. The goal is to provide the highest level of access with the lowest level of impact. Often a programmatic solution will satisfy the intent of the laws and provide the highest level of access. (See section

on ADA under Safety Management Issues under Part V., **Related Activities** for more information.)

- **Health and safety considerations:** In undertaking work on historic lighthouses, consider the impact that meeting current health and safety codes (for example, public health, life safety, fire safety, electrical, seismic, structural, and building codes) will have on character-defining spaces, features, and finishes. Special coordination with the responsible code officials at the state, county, or municipal level may be required. Securing required permits and licenses is best accomplished early in work project planning. It is often necessary to look beyond the 'letter' of code requirements to their underlying purpose; most modern codes allow for alternative approaches and reasonable variance to achieve compliance.

Some historic building materials (insulation, lead paint, mercury bearings, etc.) contain toxic substances that are potentially hazardous to building occupants. Following careful investigation and analysis, some form of abatement may be required. Hazardous materials, especially those historic in nature, may also be managed in place if maintained in good condition. All workers involved in the encapsulation, repair, or removal of known toxic substances should be adequately trained and should wear proper personal protective gear. Finally, preventative and routine maintenance for historic lighthouse structures known to contain such materials should include proper warnings and precautions. (See Safety Management Issues under Part V., **Related Activities**, for more information.)

- **Energy efficiency (sustainability):** Some features of a historic lighthouse, associated structure, or site such as cupolas, shutters, transoms, windows, ventilation systems, porches, or plantings can play an energy-conserving role. Therefore, before retrofitting historic structures to make them more energy efficient, the first step should always be to identify and evaluate existing historic features to assess their inherent energy-conserving potential. If it is determined that retrofitting measures are appropriate, then such work needs to be carried out with particular care to ensure that the lighthouse's historic character is retained.

Preparation of a Record of Treatment

The *Record of Treatment* is a compilation of information documenting actual treatment. The report usually consists of two parts.

Part 1, the *Completion Data*, summarizes in narrative form, the intent of the work, the way in which the work was approached and accomplished, conditions encountered, materials used, the time required to do the work, and the cost of the work. It also describes the history of the structure based on physical evidence discovered during construction.

Part 2, the *Project History* contains technical data such as copies of field reports and other pertinent correspondence, material data sheets, field notes, details, site maps, accounting data spread sheets (list of project expenses), and narrative contract summaries. More detailed reports will include lists of materials (type and quantity) and where they were purchased (material/vendors charts).

In addition to written reports, graphic documentation is particularly appropriate for any work that changes the form or substance of a historic lighthouse. Drawings and annotated photographs (before, during, and after) will be provided in appendices or integrated into the text of the report.

The *Record of Treatment* is produced to enhance the management and research database for historic lighthouse structures. This documentation is essential in evaluating maintenance procedures, forecasting cyclic maintenance, and interpreting the integrity of each structure.