

Historic American Engineering Record Guidelines for Historical Reports (2008, updated December 2017)

Introduction

The American Society of Civil Engineers, the Library of Congress, and the National Park Service founded the Historic American Engineering Record (HAER) in 1969 after it became apparent to many in the preservation community that industrial and engineering resources demanded a different sort of interdisciplinary approach from that applied to historic architecture. Modeled on the Historic American Buildings Survey (HABS, founded in 1933), HAER set out with historians, architects, engineers, and photographers to capture vanishing industrial and engineering treasures in rural and urban areas nationwide. In 1986, the American Society of Mechanical Engineers (ASME), the American Society of Chemical Engineers (ASCE), the American Institute of Mining and Metallurgical Engineers (AIMME), and the Institute of Electric and Electronic Engineers (IEEE) joined the American Society of Civil Engineers as signatories to HAER's mission.

HAER documentation becomes part of the collection at the Library of Congress and comes from three sources. The HAER Washington office produces documentation in-house and fields teams, comprised primarily of students, who undertake a range of projects across the country generally during twelve-week summer terms. HAER also receives documentation from federal and state agencies that are required to mitigate any adverse impacts of federal actions under sections 106 and 110 of the National Historic Preservation Act. Historians preparing mitigation documentation should contact the appropriate regional National Park Service office or HAER Washington staff with any questions and for review of completed reports. Finally, HAER accepts donated documentation from interested members of the public, such as work produced by students in university programs or consultants in the cultural resources field. The HAER Washington staff will assist authors in meeting requirements for transmittal to the Library of Congress.

Formats

HAER has developed a short format and three outline formats to guide historians in researching and writing reports. Traditionally, HAER reports have been written in a narrative format. While the narrative format can still be used if deemed appropriate, the use of the outline format is strongly encouraged. Decisions about using the short format versus one of the outline formats should be made based upon the complexity of the site or structure, the amount of information available, and the time allocated to work on the project. **At a minimum, each site or structure in the HAER collection should have a short-form report accompanying the graphical (measured drawings, photographs) documentation.**

The **short-form report** can be several pages in length and has prescribed entries. It should be used in cases where little information is available about the site or structure or where limited time is available for research.

The **outline format** prescribes the aspects of the site or structure to be discussed, *although topics within the sections can be expanded or omitted as appropriate*. Three outline formats have been developed to address the different types of sites and structures HAER documents. The **outline format: engineering structures** should be used when documenting bridges, canals, dams, railroads, highways, roads, vehicles, and other types of structures, as well as machines and other examples of electrical and mechanical engineering. The first section of the outline discusses the physical history of the structure, including its historical context. The second section considers design and structural information, including construction history and mechanics. Finally, a bibliography lists sources of information and other potential sources not investigated, if appropriate. The **outline format: manufacturing and industrial sites** considers, in addition to the physical history, context, and structural and design information, the operations and process that took place at the site, as well as the site's evolution. Manufacturing and industrial sites could include, but are not limited to, mining operations, factories, mills, and other complexes of buildings related to industrial activity. Finally, the **outline format: watercraft** should be used when documenting all types of watercraft.

HAER reports should be written in simple language, without excessive specialized terminology. Unless otherwise indicated in these guidelines, HAER follows the *Chicago Manual of Style* guidelines, which are simplified in Kate L. Turabian, *A Manual for Writers of Term Papers, Theses and Dissertations*. Specific grammar and punctuation conventions observed by HAER are found at the end of this document. Indicate sources for all information in footnotes, formatted following the *Chicago Manual of Style*. If citing materials from archives, be sure to include all relevant information so that other researchers can find the materials, such as folder and box numbers, record groups, and names of collections. All historical reports are to be prepared on a computer using Microsoft Word software and submitted in both hard copy and electronic forms. Keep formatting simple and add any images, tables, or charts as appendices at the end of the report. If including scans of full-size drawings that have been reduced in an appendix, send a full-size copy for inclusion in the field records. Be sure that any drawings included are legible, particularly dimensions. If historic images are used that are not in the public domain or are less than seventy-five years old, a copyright release form *must be* obtained from the repository or owner of the image in advance of submission. The copyright release form is included in Appendix D of this document, and a .pdf version can be obtained from the HAER Washington office. Contact the HAER Washington staff with questions about copyright.

Short Format

The short form HAER report uses the following headings and is generally only a few pages in length. Formatting of the report as shown is expected.

HISTORIC AMERICAN ENGINEERING RECORD

PRIMARY NAME OF STRUCTURE OR SITE **(Secondary Name, if applicable)**

HAER No. XX-##

[See Appendix A for information on the HAER number and assigning the name.]

- Location:** This includes the address, city or town, county, and state.
- In the second paragraph, a coordinate should be provided that locates the structure or site. See Appendix A for information on assigning coordinates.
- Date(s) of Construction:** This refers to the initial date(s) of construction. If unknown, state “Not known.” If no exact date can be determined, but a general date is known, indicate by using “ca.” and suggest a reason for the estimate. Include sources for all dates cited.
- Architect/Engineer/Builder:** Brief biographic entries are appropriate here, especially if the architect, engineer, and/or builder are not well known or are local figures. The heading can be changed to reflect the appropriate title. State “Not known” if necessary.
- Original Owner/ Occupant and Use:** This refers to the original owner(s), who may or may not be the original occupant(s), so both need to be addressed here, along with the original use of the site or structure.
- Present Owner/ Occupant and Use:** This refers to the current owner(s), who may or may not be the occupant(s), so both need to be addressed here, along with the current use of the site or structure.
- Significance:** This brief statement presents the rationale for recording the structure or site, emphasizing its significance in the local, regional, or national context. It should highlight relevant historical and engineering aspects that make the site or structure unique and are defining characteristics.

Description: The description should cover the physical characteristics of the site or structure in both its current and as-built conditions (if information is available). Dates of alterations and additions should be provided along with a discussion of the modifications, if known. Significant dimensions should be provided. Guidance on how to denote measurements in HAER reports is included in Appendix B. Finally, information on the mechanical systems and/or mechanical processes contained within the site or structure, as well as manufacturer names and dates, should be included.

History: This can expand the brief significance statement by examining the place of the site or structure in the larger context of national, regional, or local history, as well as engineering history and/or the history of technology. Consider not only the general history of the site or structure, but also its relationship to the surrounding area and the persons and events associated with its establishment and development. This section can also include information on why the site or structure was built and any construction techniques that were used, as well as contract information and how long construction lasted.

Sources: Be sure to include complete bibliographic information on every source located. For primary sources in particular provide the name of the institution or archive at which the document, drawing, or image is housed. A list of likely sources not yet investigated could be included.

Historian(s): In addition to the name(s) of the author(s), include the author affiliation(s) and the general completion date of the report.

Project Information: This is a summary of those involved in preparing the documentation, including the measured drawings, photographs, and historical report. Sponsor and cooperating organizations and institutions should also be named here.

Example of a historical report using the short format:

New York State Barge Canal, Lock CS1

HAER No. NY-521

Outline Format: Engineering Structures

The headings used in the following outline format may be deleted or expanded as necessary depending on the information available for the structure in question. Formatting of the report as an outline with proper headings and indentations is expected.

HISTORIC AMERICAN ENGINEERING RECORD

PRIMARY NAME OF STRUCTURE
(Secondary Name, if applicable)

HAER No. XX-##

[See Appendix A for information on the HAER number and assigning the name.]

- Location:** Include the address, city or town, county, and state.
- In the second paragraph, a coordinate should be provided that locates the subject. See Appendix A for information on assigning coordinates.
- Present Owner/
Occupant:** This refers to the current owner(s), who may or may not be the occupant(s), so both need to be addressed here.
- Present Use:** This is a brief statement explaining how or for what the structure is used.
- Significance:** This brief statement presents the rationale for recording the structure, emphasizing its significance in the local, regional, or national context. It should highlight the relevant historical and engineering aspects that make the structure unique and are defining characteristics. The significance statement will be expanded in following sections.
- Historian(s):** In addition to the name(s) of the author(s), include the author affiliation(s) and the general completion date of the report.
- Project
Information:** This is a summary of those involved with preparing the documentation, including the measured drawings, photographs, and historical report. Sponsor and cooperating organizations should also be named here.

[Subsequent Pages]

Part I. Historical Information

A. Physical History:

1. Date(s) of construction: This refers to the initial date(s) of construction. If unknown, state “Not known.” If no exact date can be determined, but a general date is known, indicate by using “ca.” and suggest a reason for the estimate. Include sources for all dates cited.

2. Architect/Engineer: A brief biographic entry is appropriate here, especially if the architect or engineer is not well known or is a local figure. The heading can be changed to reflect the appropriate title of the designer of the structure. State “Not known” or “None” as necessary.

3. Builder/Contractor/Supplier: This section can include such information as the construction firm, supplier of the building materials, etc. The heading can be changed to reflect the appropriate title of those involved. State “Not known” as necessary.

4. Original plans and construction: Include a capsule description of the original appearance of the structure. Original drawings, perspectives, early views, etc. should be described. Contemporary descriptions from such sources as newspapers, contracts, and engineering journals can be quoted or summarized. Physical examination of the structure may contribute to the narrative on its original appearance.

5. Alterations and additions: Dates of alterations and additions are included here, along with a description of the changes and the person(s) responsible. Deal with this material chronologically and devote a separate paragraph to each major change. Not all information comes from documents; the physical structure can provide valuable information. Note if an alteration is based on physical evidence and estimate the date, if possible, noting that it is an estimation. Use graphic sources as well; historic photographs and drawings can be valuable tools.

B. Historical Context: The context of a structure can vary tremendously and is essentially what you make it. This section expands the brief significance statement given at the beginning of the report by examining the structure’s place in the larger context of national, regional, and local history, as well as in engineering history and/or the history of technology. Consider not only the general history of the structure, but also its relationship to the surrounding area and the persons and events associated with its establishment and development. This section should also include information on how the structure was constructed and any construction techniques that were used, as well as contract information and how long construction lasted.

Part II. Structural/Design Information

A. General Statement:

1. Character: This is a statement on the architectural and engineering interest or merit of the structure, with particular emphasis on unusual or rare features. Information included in this section should help answer the questions of what distinguishes the structure in terms of design and how it reflects broader engineering trends.

2. Condition of fabric: This is not meant to be a detailed assessment of the condition of the fabric, such as those found in a Historic Structures Report. Instead, provide a general assessment of the condition of the structure at the time of the research.

B. Description: Since HAER documents a wide range of structures and objects, specific subheadings are not provided here. The author should organize the description of the *current appearance* of the subject in a logical manner, such as progressing from upper chord to lower chord, exterior to interior, front to rear, or following mile markers. The following is a list of topics that should be considered when writing the description:

Materials

Dimensions: Provide overall dimensions, written as numbers, as well as any others deemed appropriate. Guidance on how to denote measurements in HAER reports can be found in Appendix B.

Layout: When describing a linear resource, like a highway or railroad, information about the route should be included.

Auxiliary structures: If auxiliary structures are being included in the same report as the primary structure, they should be described separately.

C. Mechanicals/Operation: If the subject being documented is a machine, this section could be used to describe how the machine operated. It could also focus on the mechanical systems and/or mechanical processes contained within the structure. If known, indicate manufacturer names and dates, as well as significant badge plate information, such as model, horsepower, pressure, size (for example, tank capacity), rotations per minute, etc. Process and power connections between machines should be noted when appropriate. Details such as weight and the specifics of electrical connections need not be included unless they are unusually important to the machine's operation.

D. Site Information: Include a description of the landscape surrounding the structure and how the structure is sited, if relevant. For linear resources, like a highway or railroad, the relationship between the topography of the land and the resource is a critical piece of information. The location of any auxiliary structures in relation to the primary structure should be noted.

Part III. Sources of Information

This is an essential section of the historical report that directs subsequent researchers to all pertinent sources. Be sure to include complete bibliographic information on every source you locate. For primary sources, you should provide the name of the institution or archive at which the document is housed.

A. Primary Sources:

B. Secondary Sources:

C. Likely Sources Not Yet Investigated:

A synopsis of the format providing the headings “at a glance” is included in Appendix C.

Examples of reports written using the outline format: engineering structures:

Chicago, Milwaukee & St. Paul Railway, Bridge No. Z-6 HAER No. IL-162

Chicago Sanitary and Ship Canal, Lockport Lock HAER No. IL-197-D

Honey Run Bridge HAER NO. CA-312

Potomac Edison Company, Chesapeake & Ohio Canal Bridge HAER No. MD-23

Veterans Lake Dam HAER No. OK-6

Outline Format: Manufacturing and Industrial Sites

Written documentation of manufacturing or industrial sites could include an overview report of the site as a whole with individual historical reports pertaining to specific structures in the complex if enough information is available. There could also be one report that combines an overview of the site with more detailed information about its individual components. Contact the appropriate NPS Regional Office or HAER Washington office for additional guidance if needed. The outline format for manufacturing and industrial sites should include the following, although the headings may be deleted or expanded as necessary depending on available information. Formatting of the report as an outline with proper headings and indentations is expected.

HISTORIC AMERICAN ENGINEERING RECORD

PRIMARY NAME OF SITE
(Secondary Name, if applicable)

HAER No. XX-##

[See Appendix A for information on the HAER number and assigning the name.]

- Location:** This includes the address, city or town, county, and state.
- In the second paragraph, a coordinate should be provided that locates the structure. See Appendix A for information on assigning coordinates.
- Present Owner/
Occupant:** This refers to the current owner(s), who may or may not be the occupant(s), so both need to be addressed here.
- Present Use:** This is a brief statement explaining how or for what the structure is currently used.
- Significance:** This brief statement presents the rationale for recording the site, emphasizing its significance in the local, regional, or national context. It should highlight relevant historical and engineering aspects that make the site unique and are defining characteristics. This statement will be expanded in following sections.
- Historian(s):** In addition to the name(s) of the author(s), include the author affiliation(s) and general completion date of the report.
- Project
Information:** This is a summary of those involved with preparing the documentation, including the measured drawings, photographs, and historical report. Sponsor and cooperating organizations should also be named here.

[Subsequent Pages]

Part I. Historical Information

A. Physical History:

1. Date(s) of construction: This refers to the initial date(s) of construction. If unknown, state “Not known.” If no exact date can be determined, but a general date is known, indicate by using “ca.” and suggest a reason for the estimate. Include sources for dates.

2. Architect/Engineer: A brief biographic entry is appropriate here, especially if the architect or engineer is not well known or is a local figure. The heading can be changed to reflect the appropriate title of the designer of the site(s). State “Not known” or “None” as necessary.

3. Builder/Contractor/Supplier: This section can include items such as the construction firm and supplier of the building materials. The heading can be changed to reflect the appropriate title of those involved. State “Not known” as necessary.

4. Original plans and construction: Include a capsule description of the site’s original appearance. Original drawings, perspectives, early views, etc. should be described. Contemporary descriptions from newspapers, contracts, engineering journals, etc. can be quoted or summarized. Physical examination of the site/structure(s) may contribute to the narrative on its original appearance.

5. Alterations and additions: Dates of alterations and additions are included here, along with a description of the changes and the person(s) responsible. Deal with this material chronologically, devoting a separate paragraph to each major change. Not all information comes from documents; the physical site itself can provide valuable information. Note if an alteration is based on physical evidence and estimate the date, if possible, noting that it is an estimation. Use graphic sources as well; historic photographs and drawings can be valuable tools.

B. Historical Context: The context of a site and its structures can vary tremendously and is essentially what you make it. This section expands the brief significance statement given at the beginning of the report by examining the site’s place in the larger context of national, regional, and local history, as well as in engineering history and/or the history of technology. Consider not only the general history of the site, but also the site’s relationship to the surrounding area and the persons and events associated with its establishment and development. This section should include information on how a structure was constructed and any construction techniques that were used, especially innovative technologies, as well as contract information and how long construction lasted.

Part II. Structural/Design/Equipment Information

A. General Statement:

- 1. Character:** This is a statement about the architectural and engineering interest or merit of the site, with particular emphasis on unusual or rare features. Information included in this section should help answer the questions of what distinguishes the site in terms of design and the processing that took place there and how it reflects broader trends.
- 2. Condition of fabric:** This is not meant to be a detailed assessment of the condition of the fabric as found in a Historic Structures Reports; rather, provide a general assessment of the condition of the site and its structure(s) at the time of the research.

B. Description of Exterior:

- 1. Overall dimensions:** The dimensions are expressed as numbers. Information on how to denote measurements can be found in Appendix B.
- 2. Foundations:** Include material, thickness, and water table.
- 3. Walls:** Include overall finish materials and any ornamental features, such as quoins, pilasters, and belt courses. When a building is stuccoed, also note the materials underneath. Mention details such as the bond of a brick wall, whether the stone is laid randomly or in courses, the color and texture of the materials, and the type and source of stone, if known.
- 4. Structural system, framing:** A thorough description of the structural system is important, since this information is often not readily apparent. Note wall type, such as load-bearing or curtain wall, floor systems, and roof framing.
- 5. Porches, stoops, balconies, bulkheads:** Describe materials, form, roof, details, and location.
- 6. Chimneys/stacks:** Mention materials, number, form, and location.
- 7. Openings:**
 - a. Doorways and doors:** Include location, description, and trim.
 - b. Windows and shutters:** Include fenestration type (such as casement, two-over-two light double-hung sash), sills, lintel, trim, and shutters. If there are a variety of windows, characterize them generally.

8. Roof:

- a. Shape, truss type, covering:** Include shape (such as gable or hip), truss type, and materials. Discuss how the roof shape relates to the manufacturing process contained within the building.
- b. Cornice, eaves:** Include materials, form, notable features, and gutter system.
- c. Dormers, cupolas, towers, clerestories, monitors:** Include number, location, and individual descriptions.
- d. Use any appropriate heading:** Include any appropriate feature not covered above.

C. Description of Interior:

- 1. Floor plans:** If there are measured drawings or sketch plans included as part of the formal documentation, describe the general layout. If there are no drawings, be more specific. Start with the first floor, proceed to the top, and finish with the basement. The description should be a logical tour of the building.
- 2. Work flow:** Describe how the manufacturing or industrial activity occurs within the building.
- 3. Stairways:** Include location (if not mentioned as part of floor plans) and describe type, railing, balusters, and any ornamental features.
- 4. Flooring:** Include material, finish, and color.
- 5. Wall and ceiling finish:** Include finish materials, paneling, and color. Mention the location of any specific features being discussed or decorative details. In addition, consider the relationship of the finishes to the process occurring within the building.
- 6. Openings:**
 - a. Doorways and doors:** Include a description of the characteristic type found and individual descriptions of any notable ones, including locations.
 - b. Windows:** Discuss natural lighting features and provisions for borrowing light from other interior spaces. Describe any notable interior window trim or other features.
- 7. Mechanical equipment:**
 - a. Heating, air conditioning, ventilation:** Describe original and present systems.
 - b. Lighting:** Describe original lighting fixtures and those of interest. Mention location of those being discussed.

c. Plumbing: Describe original and present systems.

d. Use any appropriate heading: Include any feature appropriate for the structure, such as elevators, conveyor systems, etc.

D. Machines: Extant machinery should be described here and its purpose in the operation specified. If known, indicate manufacturer names and dates, as well as significant badge plate information, such as model, horsepower, pressure, size (for example loom width, tank capacity, water wheel diameter), rotations per minute, etc. Process and power connections between machines should be noted where appropriate. Details such as weight and the specifics of electrical connections need not be included unless they are unusually important to the machine's operation.

E. Site Layout: The site layout is important in terms of how structures are grouped and their relative proximity to one another. The natural environment can also be a contributing feature to the site.

Part III. Operations and Process

This section is a *critical* part of the HAER report and describes the industrial activity and process occurring at the site. The discussion of operations and process can include former activities as well as current ones.

A. Operations: Describe the current and/or past manufacturing process(es) that created the end product.

B. Technology: This should include the machines and technology used to create the end product, as well as considering how changes in technology impacted both the built environment of the site and the processing of material.

C. Workers: If information is available about the workers employed on the site, include it in this section. Topics could include the types of jobs, the ways they were performed, and any demographic information on the work force.

D. End Product: Describe the product produced at the site, with information on how and where it was shipped.

Part IV. Sources of Information

This is an essential section of the historical report that directs subsequent researchers to all pertinent sources. Be sure to include complete bibliographic information on every source you locate. For primary sources, you should provide the name of the institution or archive at which the document is housed.

A. Primary Sources:

B. Secondary Sources:

C. Likely Sources Not Yet Investigated:

A synopsis of the format providing the headings “at a glance” is included in Appendix C.

Examples of reports written using the outline format: manufacturing/industrial sites:

Belmont Mill, Powerhouse HAER No. NV-46-B

Kahului Canner, Plant No. 28, Cannery Building and Dryer House/Feed Storage Building
HAER No. HI-79-A

Outline Format: Watercraft

Written documentation of watercraft should include the following, although the headings may be deleted or expanded as necessary depending on available information.

Formatting of the report as an outline with proper headings and indentations is expected.

Note: HAER guidelines previously required that names of watercraft be written in all capital letters (for example, Schooner ERNESTINA), in accordance with once common maritime-history convention. Recently, academic writing has shifted to italicizing ship names, (for example, Schooner *Ernestina*) and HAER reports will now follow that convention. In addition, referring to watercraft as “she,” while a vernacular maritime tradition, is generally avoided in academic writing and should also be avoided in HAER reports.

HISTORIC AMERICAN ENGINEERING RECORD

**PRIMARY NAME OF WATERCRAFT
(Secondary Name, if applicable)**

HAER No. XX-##

[See Appendix A for information on the HAER number and assigning the name.]

Location: This includes the address (which could be a body of water, owner’s address, pier name and location, or museum address if it is a museum-owned watercraft), city or town, county, and state.

In the second paragraph, a coordinate can be provided that locates the watercraft at the time of the documentation. See Appendix A for information on assigning coordinates.

Rig/Type of Craft: For example, schooner, sloop, yacht, tugboat.

Trade: For example, fishing, recreation, military.

Official Number: The official number is assigned by the U.S. Coast Guard and can be found on the ship’s document and in U.S. Coast Guard and marine underwriters’ registers. A state vessel registration could also be used.

Principal

Measurements: (Try to include as many measurements as are available and applicable to the watercraft being documented, being certain to include the correct units of measurement. Compare dimensions from multiple sources whenever possible. Use either as-built or current measurements and indicate which ones are being used through the inclusion of a statement such as the one suggested below.)

For all vessels, try to include:

Length (between perpendiculars):
Length (overall):
Beam (molded):
Draft:
Deadweight:
Displacement:
Gross registered tonnage:
Net registered tonnage:

For sailing vessels, try also to include:

Length (waterline):
Depth of hold:
Sail area:

For powered vessels, try also to include:

Maximum continuous shaft horsepower:
Service speed:

A version of the following statement should be included:

(The listed dimensions are [say whether as-built or current], but it should be noted that draft, displacement, and tonnages were subject to alteration over time as well as variations in measurement.)

Propulsion: For example, sail or some type of mechanical propulsion like an electric motor

Dates of Construction: Keel laying:
Launching:
Delivery:

Original Owner: State “Not known” as necessary.

Present Owner:

Disposition: For example, museum vessel, active, submerged, inactive.

Significance: This brief statement presents the rationale for recording the watercraft, emphasizing its significance in the local, regional, or national context. It should highlight the relevant historical and engineering aspects that define the watercraft and make it unique and noteworthy or representative of its type. This statement will be expanded in subsequent sections.

Historian(s): In addition to the name(s) of the author(s), include the author affiliation(s) and the general completion date of the report.

Project

Information: This is a summary of those involved with preparing the documentation, including the measured drawings, photographs, and historical report. Sponsor and cooperating organizations should also be named here.

[Subsequent Pages]

Part I. Historical Information

A. Physical History:

- 1. Date of construction:** This refers to the keel laying, launching, and delivery dates. If unknown, state “Not known.” If no exact date can be determined, but a general date is known, indicate by using “ca.” and suggest a reason for the estimate. Include sources for all dates cited.
- 2. Designer/Naval Architect:** A brief biographic entry is appropriate here, especially if the designer or naval architect is not well known or is a local figure. State “Not known” as necessary.
- 3. Builder:** This section can include items such as the shipyard, supplier of the materials, etc. A brief biographic entry is appropriate here, especially if the shipyard or builder is not well known. State “Not known” as necessary.
- 4. Original plans and construction:** Include a capsule description of the watercraft’s original appearance. Original drawings, perspectives, early views, etc. should be described. Contemporary descriptions from newspapers, contracts, letters, etc. can be quoted or summarized. Physical examination of the watercraft may also contribute to the narrative on its original appearance.
- 5. Modifications:** Note any significant modifications made to the watercraft, along with the dates and the person(s) responsible. Deal with this material chronologically, devoting a separate paragraph to each major change. Not all information comes from documents; the watercraft itself can provide valuable information. Note if an alteration is based on physical evidence and estimate the date, if possible, noting that it is an estimation. Use graphic sources as well; historic photographs and drawings can be valuable tools. Changes in use should be included here as well.
- 6. Names:** If relevant to understanding the history and context of the watercraft, discuss the origin and meaning of the original and any subsequent names. Give dates and reasons for name changes.

B. Historical Context: The context of a watercraft can vary tremendously and is essentially what you make it. This section develops the brief significance statement

given at the beginning of the report by examining the watercraft's place in the larger context of national and local history as well as maritime history and technology. Consider the general history of the watercraft, as well as the persons/events associated with its establishment and development.

C. Operational History: This section should focus on the operational history of the watercraft.

Part II. Structural/Design Information

A. General Description: Include any or all of the relevant headings below.

- 1. Overall:** Provide an overall description of the watercraft, including dimensions and the fore to aft arrangement. Consider the hull as well.
- 2. Decks:** Describe the organization of decks, working in a logical manner through the watercraft.
- 3. Cargo holds:** Include the number and location of hold(s).
- 4. Crew accommodations:**
- 5. Safety:** This can include the number and location of life boats and rafts.

NOTE: choose from either of the B headings suggested below:

B. Mechanical Features: For the following headings, indicate manufacturer names and provide specifications as appropriate. If machinery has been removed, research can sometimes provide information as to what was formerly used and can be included in this section. Changes in types of machines used can be traced here as well. Indicate sources of information.

- 1. Engine plant:**
- 2. Boilers:**
- 3. Electrical system:**
- 4. Cargo handling arrangements:**
- 5. Steering gear:**
- 6. Other systems:** Include a description of refrigerated systems, armament, thrusters, or other equipment specific to the vessel at hand.

B. Rig and Mechanical Features: Describe the rig and sail arrangement for sailing watercraft, including other mechanical systems as appropriate.

- 1. Rig and sails:** Describe the masts, spars, rig, and sails and discuss how the rig suited the vessel's use. Note changes to rig over time.
- 2. Auxiliary engine plant:** Describe, if applicable.
- 3. Electrical system:**
- 4. Cargo handling arrangements:**
- 5. Other systems:** Include a description of armament, pumps, refrigeration systems, donkey boilers, or other equipment specific to the vessel at hand.

Part III. Sources of Information

This is an essential section of the historical report. It is important to refer the researcher to all pertinent sources. Be sure to include complete information on every source you locate. For primary sources, you should provide the name of the institution or archive at which the document is housed.

A. Primary Sources:

B. Secondary Sources:

C. Likely Sources Not Yet Investigated:

A synopsis of the format providing the headings "at a glance" is included in Appendix C.

Examples of reports written using the outline format: watercraft:

Esso Gettysburg HAER No. CA-354

R-Boat Pirate HAER No. WA-187

CONTACT INFORMATION:

HAER Washington Staff:

Acting Chief (Position Currently Vacant)

Justine Christianson
Historian
(202) 354-2183 or Justine_Christianson@nps.gov

Todd Croteau
Maritime Program Coordinator
(202) 354-2167 or Todd_Croteau@nps.gov

Christopher Marston
National Covered Bridges Recording Project Coordinator
(202) 354-2162 or christopher_marston@nps.gov

Mailing Address:

Historic American Engineering Record
National Park Service
1849 C St NW, Mail Stop 7408
Washington, DC 20240

Regional Office Contacts:

See: <https://www.nps.gov/hdp/regions.htm>

Appendix A: General Guidelines for HAER Documentation

HAER Number

Every structure is assigned a HAER number, which becomes its identifying number within the HAER collection. The number consists of the two-letter state abbreviation, hyphen, and number. Contact the HAER Washington office or appropriate NPS regional office to receive a HAER number and for additional guidance. The HAER number **must appear** on every piece of documentation sent to the Library of Congress, including all items sent in the field records. In the first page of the HAER report, the program name and structure, site, or watercraft name are centered at the top of the page, using the following format:

HISTORIC AMERICAN ENGINEERING RECORD
STRUCTURE, SITE, OR WATERCRAFT NAME
HAER No. XX-##

and on successive pages of the report, the structure, site, or vessel name and HAER number are included in a header, right justified, as shown:

SITE, STRUCTURE, OR WATERCRAFT NAME
HAER No. XX-#
(Page #)

The name of the structure, site, or watercraft is written using all capital letters in the header. The HAER number is always preceded by “HAER No.” to differentiate it from items in the HABS and HALS collections.

If a complex is being documented, generally the site as a whole will receive a HAER number, such as: Southern Pacific, Sacramento Shops, HAER No. CA-303. Each building that is part of the complex and being separately documented will receive a subsidiary number, such as: Southern Pacific, Sacramento Shops, Erecting Shop, HAER No. CA-303-A.

Assigning Names to Structures and Sites

When assigning the primary name to a structure, site, or watercraft, use the *historic* name, which will not change with each new owner or use. Often, determining the historic name requires research. On those occasions when the historic name is not well known, and researchers using HAER records may not be able to identify a structure using that designation, a secondary name can be used. Secondary names, which are often common or current names, are included to aid in the use of HAER records. More than one secondary name can be included.

Pacific Creosoting Plant
(Wyckoff Facility)

Old Corinth Road Bridge
(Hadley Parabolic Bridge)
(Bow Bridge)

Statements such as “Now the” or “Currently” with a name as part of the title are unnecessary since this will eventually be outdated. Avoid using words such as “Old” in the name, unless it is part of the recognized name.

If the original name cannot be determined, the address, qualified by a general designation, is used as the name.

411 Piquette Avenue (Industrial)
600 Lincoln Street (Commercial)

In the case of complexes containing several buildings, the overall complex name is used in the first part of the name, followed by the individual structure.

Alcoa-New Kensington Works, Finishing & Shipping Building
Arroyo Seco Parkway, Meridian Avenue Bridge
Stockham Pipe & Fittings Company, Tapping Room

Watercraft names should be italicized. While the practice of setting watercraft names in all capital letters is a common historical practice (e.g. TICONDEROGA), academic writing has shifted to italicizing them (*Ticonderoga*), a practice also recommended by the *Chicago Manual of Style*.

Determining Location

The location of the structure includes the street, the city or town, county, and state.

For urban areas, use the number and street, such as 512 Main Street. If the street name is a number, use the local convention to determine whether to write it in digits or words.

35 E. 42nd Street
566 Seventh Avenue

If the site is large, the streets bounding it could be used.

Main Street, between Pearl and Water streets
Bounded by Voyager Circle and Mariner Drive

In small towns or rural areas, a more descriptive address is required. Structures can be located within one-tenth of a mile from the nearest intersection or they can be located in relation to a natural landmark or the nearest road.

3 miles northwest of Naturita, between Highway 141 and San Miguel River
Route 88 on west bank of Monongahela River
South bank of Indian River, 1 mile east of Breached Mill Dam

The location of bridges includes what they span and gives the name of the road they carry, if applicable.

Spanning west fork of White River at County Road 48
Spanning Frazer Creek at Schoodic Peninsula Road
Spanning Maryland Route 5 at Spring Gap
Spanning Conrail Railway, eastbound, at US-10

In general, watercraft should be located in the body of water in which they are docked.

Hyde Street Pier
Hawaii Maritime Center, Pier 7
James River Reserve Fleet

Similarly, vehicles and aircraft that may still be operational should be located at the address of their home base of operation.

If the structure or site is not located within the boundaries of a city or town, it is located in reference to the nearest city or town. Always include the word “vicinity” with the town name to clarify the location, such as “Hyattsville vicinity.” Generally, the vicinity is the nearest city or town that has a zip code. Consider local usage and custom here. Keep the vicinity in the same county as the property.

The location also includes a coordinate that locates the structure. The coordinate should be expressed in decimal degrees using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84). If your data is not in decimal degree format, visit the FCC’s DDD MM SS and Decimal Degrees Conversions website: <https://www.fcc.gov/media/radio/dms-decimal>. Alternatively, if your data is in UTM format, visit Montana State University’s Lat/Lon and UTM converter: <http://www.rcn.montana.edu/resources/converter.aspx>.

Additionally, information about the source of the coordinate should be provided: 1) identify the location of the coordinate relative to the structure; 2) indicate the date the coordinate was obtained; 3) identify the method by which the coordinate was obtained; 4) provide an estimate of the coordinate’s accuracy expressed in +/- meters; 5) specify the coordinate’s datum; and 6) indicate any restrictions on releasing the structure’s location to the public. Examples are provided below.

Bennett’s Mill Bridge is located at latitude: 34.60251, longitude: -50.69997. The coordinate represents the structure’s northeast corner. This coordinate was obtained on February 10, 2003, using a GPS mapping grade unit accurate to +/- 3 meters after differential correction. The coordinate’s datum is North American Datum 1983. The Bennett’s Mill Bridge location has no restriction on its release to the public.

Mascot Roller Mills is located at latitude: 40.06281, longitude: -76.1573. The coordinate represents the main entrance point of the mill house. This coordinate was obtained on April 2, 1996, by plotting its location on the 1:24000 Leola, PA USGS Topographic Quadrangle Map. The accuracy of the coordinate is +/- 12 meters. The coordinate's datum is North American Datum 1983. Mascot Roller Mills' location is restricted pending concurrence of the owner to release its location to the public.

(Note: the accuracy of the 1:24 quad map will always be +/- 12 meters.)

If the release of the locational data is restricted, submit the coordinate information for entry into the HAER database along with the documentation; however, *it must not appear* in the final report for the Library of Congress' website.

Citing HAER Documentation

The following format should be used when citing HAER documentation in the reports.

If citing the entire record,

Bibliography:

Historic American Engineering Record (HAER), National Park Service, U.S. Department of the Interior. "Robert B. Morse Water Filtration Plant." HAER No. MD-166.

Footnote:

Historic American Engineering Record (HAER), National Park Service, U.S. Department of the Interior, "Robert B. Morse Water Filtration Plant," HAER No. MD-166.

If citing the report,

Bibliography:

Bennett, Lola. "Bennett's Mill Bridge." HAER No. KY-49. Historic American Engineering Record (HAER), National Park Service, U.S. Department of the Interior, date.

Footnote:

Lola Bennett, "Bennett's Mill Bridge," HAER No. KY-49, Historic American Engineering Record (HAER), National Park Service, U.S. Department of the Interior, date, p. #.

Appendix B: Spelling, Grammar, and Punctuation Notes

There are some common issues with terminological definitions, formats, spellings and dates that are particular to architectural and engineering history. This section provides established HAER conventions.

Spelling, Single Word:

beehive (oven)	Neoclassical, <i>not</i> neoclassical, Neo-
beltcourse, stringcourse	classical
courthouse	powerhouse, <i>but</i> power plant
gristmill, sawmill	sidelights
hoodmolds	whitewash
latticework	wraparound porch

Spelling, Two Words:

row house
meeting house
bell tower
concrete block, concrete-block base
main line
water table

Clarifications:

façade vs. elevation

a façade is the wall of a building; an elevation is a drawing of that wall

interior vs. inside; exterior vs. outside

interior and exterior connote defined boundaries, while the others are nonspecific

concrete vs. cement

cement is the dry mix that water, et al. is added to in the making of concrete

storefront

the first floor only of a commercial structure, *not* the entire front façade

glazing, light, panes, sash, windows, fenestration

windows can be described in general as glazing; units of window glass *before* installation are panes—once installed, glazing units are lights, *not* panes; lights grouped into a frame are sash; fenestration indicates a number and arrangement of window openings in a façade

L-plan vs. ell

buildings take the form of T-plans, H-plans, and L-plans for their resemblance to those letters; “ell” is the wing or block, usually a rear add-on, that is the three dimensional version of the wing indicated on the L-plan

molding vs. moulding

in England, carved mouldings are commonplace, but in America, they are moldings

mantel vs. mantle

a mantel is the structural support above and the finish around a fireplace; a mantle is an outer wall of casing composed of a separate material than the core apparatus, as in a blast furnace, and it is the feature on a gaslight from which the light emerges

cinder block vs. concrete block

cinder block is made with a lightweight concrete aggregate and is widely used for interior partitions; concrete block is heavier, stronger, and used in structural walls

wood vs. wooden

wood is wood, or frame; wooden may be hard, durable, and stiff like wood, but it is not necessarily wood (this principle also applies to oak vs. oaken, etc.)

historic vs. historical

historic is the adjective used to denote something that is old and presumably important, i.e. historic preservation, historic building fabric; historical is the adjective used when the subject relates to history, i.e. historically significant house, historical record

lath vs. lathe

lath is a strip of wood used as the groundwork for plaster, as applied to walls (plural laths); a lathe is a machine tool for shaping circular pieces of wood or metal

Years:

1930s, '30s

not Thirties and *never* 1930's using an apostrophe

1856-90, 1850-1940

do *not* repeat the century unless it changes; always include the decade, i.e. 1850-57, not 1850-7

first quarter of the nineteenth century

not first quarter of the 1800s

spring 1888, December 1900

do *not* use a comma, as in "spring, 1888" or "December, 1900"; also, do *not* use "December of 1900"

Dates:

July 4, 1776, was a great day, or 4 July 1776
either is acceptable, note comma after year

ca. 1850

not c. or circa written out

Numbers and Numerals:

All numbers from one to ninety-nine are written out; 100 and above are cited as numerals, *except* in the case of ages, street numbers, dimensions, and millions.

For example:

“In 1850-60, an estimated forty-seven miners traveled more than 650 miles across the western states. Many did not live past the age of 40, although one 89-year-old man lived into the twentieth century. He lived at 37 Gold Rush Avenue. The frame dwelling was a 10'-4" x 12'-0" space and cost only about \$577.00 when the old man bought it in December 1898, yet legend says he was worth \$2 million.”

centuries

the nineteenth century *but* nineteenth-century dogma
not 19th century or 18th-C

percentages

0.7 percent; 50 percent

always use numerals, and spell out “percent” unless in a chart or graph when “%” may be used

money

\$5.87, \$24.00, \$24.25, \$234.98, 1 cent, 10 cents, 99 cents use numerals, except in the case of millions or larger (\$5.87 million)

dimensions

Measurements and dimensions are *never* written out, they always appear as numerals, and feet or inches are always indicated using technical symbols, with two types of exceptions.

20'-7" x 18'-0", 6'-3-¹/₂"

use lower case x, *not* “by”

hyphenate all feet and inch numerals, and any fractions

indicate an even foot measurement with –0" if known to be exact

exceptions:

10 cubic feet and 10 square feet, *not* 10 cubic'

Approximate measurements do *not* require the –0", i.e. “The three storefronts measure about 20' wide and 40' deep.”

NOTE: Authors are encouraged to use Microsoft Word's symbols for feet and inches, rather than apostrophes and quotation marks. In addition, the use of superscript and subscript fonts for numbers that are part of fractions is suggested. Finally, when punctuating dimensions, commas fall *outside* the feet/inches marks, i.e. "The planks measured 10'-6", 5'-1 1/2", and 2'-0"."

Streets/Addresses:

222 Packard St.

capitalize and abbreviate street, avenue, boulevard, etc. but *not* short items such as road or lane, when the number prefaces the street name

Sam lived on Packard Street.

write out and capitalize street when no number is given

It is at the confluence of Packard and Mill streets.

when two proper names (also true of companies, rivers, etc.) are listed, do *not* capitalize street

The houses surveyed are No. 15 and No. 27 Mill Street.

The deed cites lot No. 146.

"number(s)" is always capitalized and abbreviated as No. or Nos.

Interstate 66, U.S. 30, Route 30

write out and capitalize "interstate" on first reference; subsequent references are abbreviated, i.e. I-66

Towns:

Omaha, Nebraska, is a lovely town.

Note comma after state.

Abbreviations/Acronyms:

United States

U.S. government, U.S. Department of the Interior, U.S. exports

write out "United States" when it is a noun, but *not* when it is an adjective; *do not* place a space between U. and S., i.e. U. S.

Technical abbreviations

do not abbreviate technical terms unless spelled out at first reference, i.e. revolutions per minute (rpm) or horsepower (hp)

Acronyms

write out the complete name on first reference, putting the proper name's acronym in parentheses afterward; thereafter use the acronym only

"Completed in 1965, the Saturn V Dynamic Test Stand (DTS) at the George C. Marshall Space Flight Center (MSFC) provided National Aeronautics and Space

Administration (NASA) engineers with a means to perform vibration tests on a complete assembly, or “stack,” of the Apollo-Saturn V spacecraft and launch vehicle to determine its control system and structural responses to the wide spectrum of aerodynamic loads that were possible during the boost phase of an Apollo lunar mission....The basic design proved to be an adaptable one a decade later when the DTS was modified to perform similar testing on the Space Transportation System—commonly known as the Space Shuttle—stack using the original support technology.”

Hyphenations:

Many phrases are clarified when augmented by a hyphen; the following architectural terminology is clarified by employing the general rules of hyphenation:

1. In general, hyphenate an adjectival construction, one which precedes the subject and modifies it.
2. In general, do *not* hyphenate an “ly” word with another word, including “federally”.
3. Do *not* hyphenate “late” or “early” before a century.

one-over-one-light double-hung sash
write out the numbers, *not* 1/1 double-hung sash

bird’s-eye view; bull’s eye window

load-bearing brick wall; *but* the brick wall is load bearing

stained-glass windows; *but* the windows contain stained glass

side-hall and center-hall plans; *but* the house has a center hall

rough-cut stone

five- and seven-course bond; *but* American bond is laid in five or seven courses

single-family and multi-family dwelling

gable-end chimney; *but* the chimney is on the gable end

side-gable roof

canal-era, Civil War-era structure
not Civil-War-era

bead-and-reel molding; *but* the molding motif is bead and reel

standing-seam (metal roof)

nineteenth-century lighthouse

do *not* hyphenate a “late” or “early”, i.e. a late eighteenth-century springhouse

cold-blast furnace

cast-iron bearing shoe; *but* the bearing shoe is cast iron

wrought-iron rod; *but* the rod is wrought iron

Palladian-style, a Mission-style roofline

append “-style” to an established architectural term if your subject is reminiscent of the original but not an example of the actual model; this is not to be confused with proper names such as International Style, which take capital letters and would *not* be hyphenated

Appendix C: HAER Outlines “At a Glance”

Outline: Engineering Structure

HISTORIC AMERICAN ENGINEERING
RECORD
NAME OF STRUCTURE
(Secondary Name)
HAER No. XX-##

Location:

Present Owner/Occupant:

Present Use:

Significance:

Historian(s):

Project Information:

Part III. Sources of Information

A. Primary Sources:

B. Secondary Sources:

C. Likely Sources Not Yet Investigated

Part I. Historical Information

A. Physical History:

1. Date of Construction:
2. Architect/Engineer:
3. Builder/Contractor/Supplier:
4. Original Plans and Construction:
5. Alterations and Additions:

B. Historical Context:

Part II. Structural/Design Information

A. General Statement:

1. Character:
2. Condition of Fabric:

B. Description:

C. Mechanicals:

D. Site Information:

Outline Format: Manufacturing and Industrial Sites

HISTORIC AMERICAN ENGINEERING
RECORD
PRIMARY NAME OF SITE
(Secondary Name, if applicable)
HAER No. XX-##

Location:

Present Owner/Occupant:

Present Use:

Significance:

Historian(s):

Project Information:

Part I. Historical Information

A. Physical History:

1. Date of Construction:
2. Architect/Engineer:
3. Builder/Contractor/Supplier:
4. Original Plans and Construction:
5. Alterations and Additions:

B. Historical Context:

Part II. Structural/Design/Equipment
Information

A. General Statement:

1. Character:
2. Condition of Fabric:

B. Description of Exterior:

1. Overall dimensions:
2. Foundations:
3. Walls:
4. Structural system, framing:
5. Porches, stoops, balconies, bulkheads:
6. Chimneys/stacks:
7. Openings:
 - a. Doorways and doors:
 - b. Windows and shutters:
8. Roof:
 - a. Shape, truss type, covering:
 - b. Cornice, eaves:
 - c. Dormers, cupolas, towers, clerestories, monitors:

d. Use any appropriate heading

C. Description of Interior:

1. Floor plans:
2. Work flow:
3. Stairways:
4. Flooring:
5. Wall and ceiling finish:
6. Openings:
 - a. Doorways and doors:
 - b. Windows:
7. Mechanical equipment:
 - a. Heating, air conditioning, ventilation
 - b. Lighting:
 - c. Plumbing:
 - d. Use any appropriate heading:

D. Machines:

E. Site Layout:

Part III. Operations and Process

A. Operations:

B. Technology:

C. Workers:

D. End Product:

Part IV. Sources of Information

A. Primary Sources:

B. Secondary Sources:

C. Likely Sources Not Yet Investigated:

Outline Format: Watercraft

HISTORIC AMERICAN ENGINEERING
RECORD
PRIMARY NAME OF WATERCRAFT
(Secondary Name, if applicable)
HAER No. XX-##

Location:
Rig/Type of Craft:
Trade:
Official Number:
Principal
Measurements: Length (bp):
 Length (oa):
 Beam (molded):
 Draft:
 Deadweight:
 Displacement:
 Gross registered tonnage:
 Net registered tonnage:
Sailing vessels: Length (wl):
 Depth of hold:
 Sail area:
Powered vessels: Maximum
 continuous shaft
 horsepower:
 Service speed:
(The listed dimensions are [as-built
or current], but it should be noted
that draft, displacement, and
tonnages were subject to alteration
over time as well as variations in
measurement.)
Propulsion:
Dates of
Construction: Keel laying:
 Launching:
 Delivery:
Original Owner:
Present Owner:
Disposition:
Significance:
Historian(s):
Project Information:

Part I. Historical Information

A. Physical History:

1. Date of construction:
2. Designer/Naval Architect:
3. Builder:
4. Original Plans and Construction:
5. Modifications:
6. Names:

B. Historical Context:

C. Operational History:

Part II. Structural/Design Information

A. General Description:

1. Overall:
2. Decks:
3. Cargo holds:
4. Crew accommodations:
5. Safety:

EITHER: B. Mechanical Features:

1. Engine plant:
2. Boilers:
3. Electrical system:
4. Cargo handling arrangements:
5. Steering gear:
6. Other systems

OR: B. Rig and Mechanical Features:

1. Rig and sails:
2. Auxiliary engine plant:
3. Electrical system:
4. Cargo handling arrangements:
5. Other systems:

Part III. Sources of Information

A. Primary Sources:

B. Secondary Sources:

C. Likely Sources Not Yet Investigated

Appendix D: Copyright Release Form

The form must be used as written below. Send the completed form with the final historical report.

RELEASE AND ASSIGNMENT

I, _____, am the owner, or am authorized to act on behalf of the owner, of the materials described below including but not limited to copyright therein, that the National Park Service has requested to use, reproduce and make available as public domain materials at the Library of Congress as part of the Historic American Buildings Survey/Historic American Engineering Record collections. (If not the sole copyright owner, please specify in the space below any additional permissions needed, if any, to grant these rights.) I hereby transfer and assign to the National Park Service any and all rights including but not limited to copyrights in the materials specified below.

Survey Number: HABS No. _____, HAER No. _____ *or*
HALS No. _____

Types of Materials (please check all that apply):

Photographs _____ Illustrations _____ Textual materials _____
Oral History/Interviews _____ Audiotape _____ Videotape _____
Other (describe) _____

Detailed Description of Materials (attach additional pages if necessary):

Additional Permissions Needed, if any (for example, copyright owner, subjects in photographs, illustrations in text):

Disposition of Materials After Use (please check one): _____ Return to owner
_____ May be retained

Name (please print)

Signature

Date

Address

Telephone Number