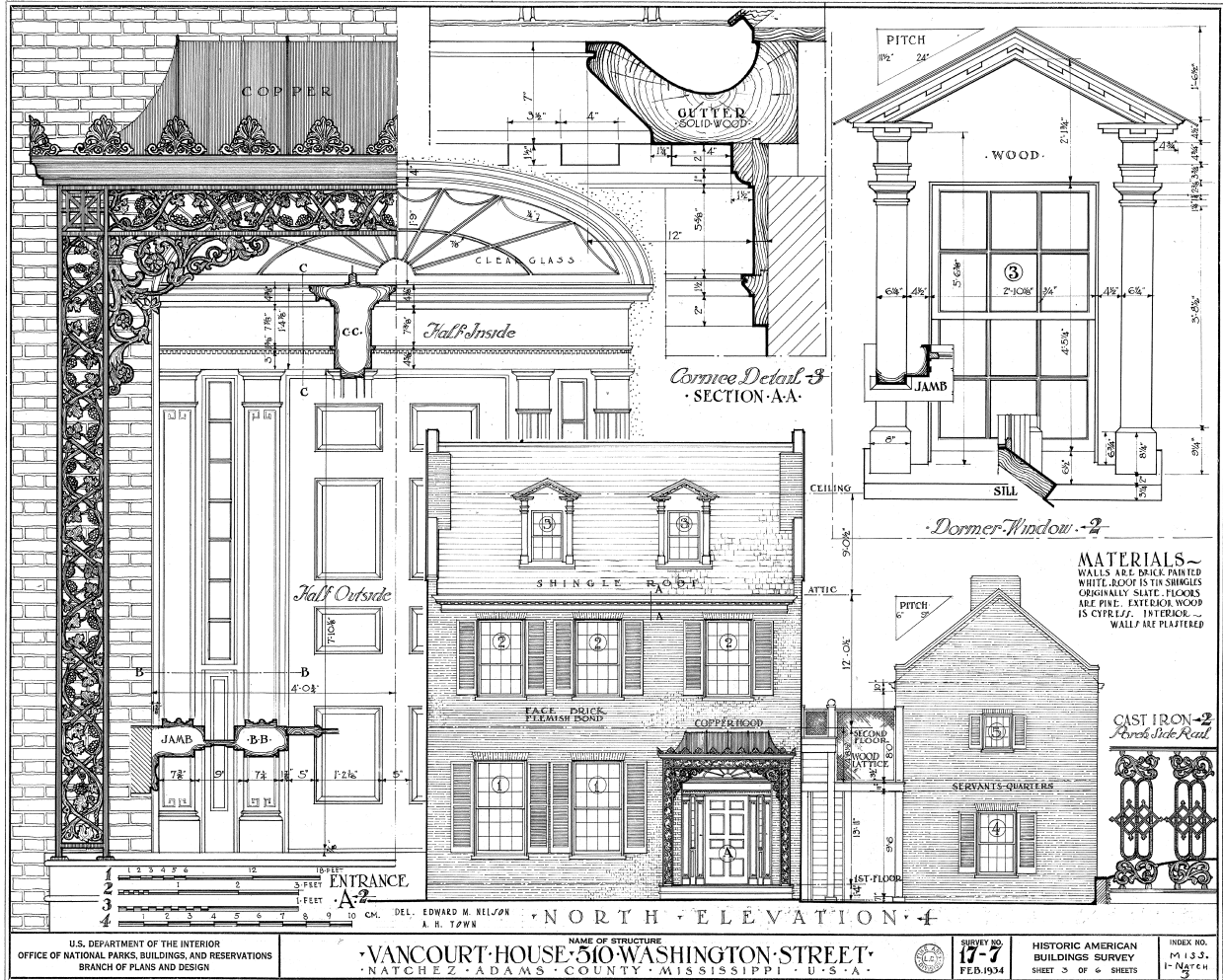


**HABS GUIDELINES**

**RECORDING HISTORIC STRUCTURES AND SITES**

**WITH**

**HABS MEASURED DRAWINGS**



United States Department of the Interior  
 National Park Service  
 Heritage Documentation Programs  
 Historic American Buildings Survey  
 1849 C Street NW (2270)  
 Washington DC 20240  
 202-354-2135  
<http://www.nps.gov/history/hdp/>



December 2008

# **HABS Guidelines**

## **Recording Historic Structures and Sites with HABS Measured Drawings**

### **INTRODUCTION**

#### **1.0 PROJECT PLANNING**

##### **1.1 General**

#### **2.0 FIELD NOTES**

##### **2.1 Field-Noting Requirements**

##### **2.2 Digital Field Data**

#### **3.0 SKETCHING AND MEASURING STRUCTURES**

##### **3.1 General Requirements**

##### **3.2 Sketching and Measuring Site Plans**

##### **3.3 Sketching and Measuring Plans**

##### **3.4 Sketching and Measuring Elevations**

##### **3.5 Sketching and Measuring Sections**

##### **3.6 Sketching and Measuring Details**

#### **4.0 DRAWING PRODUCTION**

##### **4.1 Hand Drawings**

##### **4.2 Computer-Aided Drafting (CAD) Drawings**

##### **4.3 Line Weights**

##### **4.4 Site Plans**

##### **4.5 Plans**

##### **4.6 Elevations**

##### **4.7 Sections**

##### **4.8 Axonometric Drawings**

##### **4.9 Perspective Drawings**

##### **4.10 Interpretive Drawings**

#### **5.0 DRAWING SET ORGANIZATION, LAYOUT, AND PLOTTING**

##### **5.1 Drawing Sheet Size and Orientation**

##### **5.2 Drawing Scale**

##### **5.3 Drawing Sequence**

##### **5.4 Sheet Layout**

##### **5.5 Cover Sheets**

##### **5.6 Text and Fonts**

##### **5.7 Labeling, Dimensions, and Notes**

##### **5.8 Title Block**

##### **5.9 Final Plotting**

## INTRODUCTION

This document defines the methodology and the process for the documentation of historic buildings and structures by means of architectural measured drawings, according to the standards of the Historic American Buildings Survey (HABS). Established in 1933, HABS is the United States government's oldest historic preservation program, and since 1934 has operated under a tripartite agreement between the National Park Service, the Library of Congress, and the American Institute of Architects. As such, these guidelines represent more than 75 years of comprehensive experience in building documentation practice. Individuals and teams wishing to submit documentation for inclusion in the HABS Collection at the Library of Congress should review this document closely, and are required to follow the procedures described therein.

Buildings are typically selected for HABS documentation because of their historic and/or architectural importance. Thus the fundamental intent of HABS documentation is to illustrate and explain this significance. An ideal HABS documentation project consists of three components: measured drawings, large-format photographs, and a written historical report. Each of these components plays a unique and integral role in the documentation project, and is intended to complement, rather than replicate, the others. Project sponsors and teams should aspire to documentation projects which are as comprehensive as possible. However, in situations where it is not possible to undertake a photography and/or a history component, it may be necessary to expand the scope of the measured drawings component in order to more fully illustrate the significance of the building.

HABS drawings are considered "as-built" drawings. As such, they illustrate the existing condition of a building at the time of documentation, including additions, alterations, and demolitions which have occurred since the building was first constructed. Where sufficient knowledge exists concerning the sequence of changes to a building over time, it may be useful to provide appropriate notation on the drawings. Alternatively, delineators may wish to produce additional interpretive drawings illustrating the building at an earlier date, in order to more fully explain its historic significance.

HABS drawings typically serve multiple purposes. At their most basic, they provide a simple documentary record of a building, in standardized format, which is placed in the public domain at the Library of Congress, where it is made available to the general public and specialized researchers alike. HABS drawings are frequently used as illustrations in both scholarly and popular publications. They are often used for interpretive purposes at historic sites. A significant role for HABS drawings is that of base architectural drawings for facilities management purposes, as well as for renovation and restoration projects. And where an important historic resource is faced with an adverse impact, such demolition or substantial alteration, HABS documentation can serve a mitigative role.

Every historic building is unique, and thus each HABS documentation project is a unique

undertaking. While every attempt has been made to make these guidelines as comprehensive and straightforward as possible, not every contingency of the documentation process can be foreseen. Flexibility and adaptation to circumstances by a documentation team are essential components for the success of any documentation project. For questions and issues not addressed in these guidelines, users should feel free to contact the HABS architectural staff.



The legislative authority for the Historic American Buildings Survey is the 1935 Historic Sites Act (Public Law 74-292) and the 1966 National Historic Preservation Act (Public Law 89-665), as amended in 1980 (Public Law 96-515).



These Guidelines should be used in conjunction with:

*Secretary of the Interior's Standards and Guidelines for Architectural and Engineering Documentation*, originally published in the *Federal Register*, Volume 48, Number 190, (Thursday, 29 September 1983), pages 44730-34, generally known as the *HABS/HAER Standards*.

<https://www.nps.gov/subjects/heritagedocumentation/soi-standards-guidelines.htm>

*Recording Historic Structures, Second Edition*, John A. Burns, editor. Hoboken: John Wiley & Sons, 2004.

*HABS/HAER Guidelines: HABS Historical Reports*

<https://www.nps.gov/subjects/heritagedocumentation/guidelines.htm>

*HABS/HAER Guidelines: HABS/HAER Photographs: Specifications and Guidelines*

<https://www.nps.gov/subjects/heritagedocumentation/guidelines.htm>

*Preparing HABS/HAER/HALS Documentation for Transmittal to the Library of Congress*

<https://www.nps.gov/subjects/heritagedocumentation/guidelines.htm>



*HABS Guidelines: Recording Historic Structures and Sites with HABS Measured Drawings* was originally written by Joseph D. Balachowski, HABS Architect, 1994; and revised by Robert R. Arzola, HABS Architect, 2001. This version was written by Mark Schara AIA, HABS Architect, 2008, in consultation with the HABS architectural staff and with the HABS Coordinating Committee of the American Institute of Architects. This document is copyright-free and in the public domain.

## **1.0.0 PROJECT PLANNING**

### **1.1.0 GENERAL**

- 1.1.1 All HABS documentation projects involve issues of funding, staffing, equipment, logistics, building access, and schedule. Careful consideration of each of these factors by the project supervisor, prior to commencement of the project, is essential for project success.
- 1.1.2 The list of anticipated drawings for a project should be determined by the project supervisor, in consultation with the project sponsor, in advance of the project's commencement. Project supervisors should aspire to projects which are as comprehensive and complete as possible. However, because of limitations of funding, time, etc, a comprehensive project is not always attainable. In such cases, it will be necessary for the project supervisor to prioritize the list of drawings, always keeping in mind that the drawings should illustrate, explain, and emphasize the historic significance of the building.
- 1.1.3 The equipment required for a documentation project should be assembled prior to the commencement of the project.
- 1.1.4 Safety is of the utmost concern, and is ultimately the responsibility of the project supervisor. Buildings selected for HABS documentation are frequently empty, abandoned, and/or deteriorating. Measuring elevations and sections typically involves working at heights on ladders, scaffolding, cherry pickers, etc. All participants on a HABS documentation project should adhere to the standards and regulations of the Occupational Safety and Health Administration, at all times.

## **2.0.0 FIELD NOTES**

### **2.1.0 SKETCHING AND FIELD-NOTING REQUIREMENTS**

- 2.1.1 Field sketches, dimensions, and notes should be drawn on graph paper with eight divisions per inch. Only one side of the paper is used. HABS typically uses 17" x 22" sheets, which then can be easily folded to 8 ½" x 11".
- 2.1.2 Legibility in sketching, dimensioning, and noting is of the utmost importance. All field notes for a project should be able to be read by any delineator on the project team.
- 2.1.3 Sketching is typically done either with a sharp #2 pencil, or with a lead holder using a dark, non-smearing lead.
- 2.1.4 The graph paper grid is used to lay out the sketch proportionately. Field note sketches should be drawn large enough to accommodate long strings of dimensions neatly. Complex elements should be simplified. It may be necessary to exaggerate certain features, so that there will be enough room to write the dimensions legibly. Details, such as door and window jambs, should be sketched separately (typically on another sheet) at a larger scale and referenced appropriately.
- 2.1.5 For particularly large and/or complicated buildings, it may be necessary to lay out individual drawings (plans, elevations, or sections) over multiple sheets of field notes. Care should be taken in the location of break lines, as well as to make sure the individual sheets are appropriately referenced to one another.
- 2.1.6 Only the hard edges and joint lines of structures and objects are shown. Textures or shadows should not be depicted on field sketches. Fixed objects (such as bathroom fixtures or kitchen counters) may be shown if historically significant, or if required by the project sponsor. Moveable objects (such as furniture) are typically not shown.
- 2.1.7 Each field note sheet must be labeled with the name of the building or structure, the identification of the sketch, the name of the delineator, the date, and the HABS number (if it has been already assigned). For transmittal, sheets must be folded to 8 ½" x 11" size.

### **2.2.0 DIGITAL FIELD DATA**

- 2.2.1 Digital photographs used in the documentation process should be printed out as thumbnails on contact sheets and included with the field notes. A compact disc with the digital photographic files should also be included with the field notes.

- 2.2.2 Photogrammetric images used in the documentation process should be printed and included with the field notes, along with any control point data.
- 2.2.3 Points taken with a laser total station should be printed out in spreadsheet fashion and included with the field notes.
- 2.2.4 Three-dimensional laser scanning “point clouds” should be copied to a compact disc and included with the field notes.

### **3.0.0 SKETCHING AND MEASURING STRUCTURES**

#### **3.1.0 GENERAL REQUIREMENTS**

- 3.1.1 Only metal measuring tapes should be used. Fiberglass (cloth) tapes have a tendency to stretch when pulled over long distances, and are therefore unreliable.
- 3.1.2 Measurements are taken as long, continuous, running strings wherever possible. Avoid incremental measurements, since they tend to accumulate errors over long distances.
- 3.1.3 Dimension and extension lines are drawn, and dimensions are written, using a colored pen or pencil, so as to be easily discernable against the background pencil sketch. HABS typically uses red pens for recording measurements. Measurements should be written perpendicular to the dimension line and close to the appropriate tick mark, rather than halfway between two tick marks.
- 3.1.4 For plans, elevations, and sections, HABS typically measures to the nearest 1/8" of an inch. HABS records each dimension with three numbers, separated by periods, representing feet, inches, and eighths of an inch. For example, "3.1.2" would translate as 3'-1 1/4".

#### **3.2.0 SKETCHING AND MEASURING SITE PLANS**

- 3.2.1 Site plans are typically measured using a laser total station, or other surveying device, to locate major features (such as building corners, trees, road and sidewalk outlines, etc). Small, relatively flat site plans may be measured with measuring tapes, using triangulation.
- 3.2.2 Buildings in site plans are typically measured to exterior wall corners. Because buildings are shown in roof plan on the finished site plan, it may also be necessary to separately capture roof overhang information so that the roof edges may be located accurately.
- 3.2.3 Trees shown individually in a site plan should have both their trunk (circumference taken at approximately 4'-0" above grade) and their spread or canopy (diameter) measured. Typically these measurements are listed in a separate table on the field note, referenced according to survey point.
- 3.2.4 Site plan details (such as fence posts, curbs, manhole covers, paving patterns, etc) are typically measured by hand.

#### **3.3.0 SKETCHING AND MEASURING PLANS**



- 3.3.1 Plans are typically drawn and measured at approximately 4'-0" above the floor. However, the height at which the measurement strings are taken may jog in order to pick up important features. For example, plans are typically measured above chair rails and through the lower sash of double-hung windows, but also through fireplace openings at their maximum depth.
- 3.3.2 Each wall of every room should be systematically measured with a continuous string, corner to corner. The string should pick up all significant features, such as doors, windows, and fireplaces.
- 3.3.3 For irregular or non-orthogonal rooms, additional diagonal measurements should be taken between opposite corners. The diagonal dimension lines may be drawn directly on the plan or, alternately, a matrix or chart may list the dimensions, drawn off to the side on the field note.
- 3.3.4 For very large and/or highly irregular rooms, it may be necessary to use a laser total station to locate corners and significant features.
- 3.3.5 Circular or oval rooms are typically measured using triangulation, referencing enough points to adequately capture the curvature of the walls. A laser total station may also be useful for capturing the curvature of the walls.
- 3.3.6 Wherever possible, long strings should be taken through door openings to opposite walls in adjacent rooms. This will aid in determining wall thicknesses.
- 3.3.7 Door and window openings should be consistently and systematically measured either to the outside edge or the inside edge of their frames.
- 3.3.8 Floor patterns (floor boards, tiles, etc) are typically measured using separate strings from those used to measure the walls. (If drawings are being produced using CAD, it is often useful to measure and draw the wall outlines first, then print out a draft plan to use as a field note for adding the floor board strings.)
- 3.3.9 If the treads of a stair are consistently spaced, it is not necessary to measure to every step. The front edge of the top and bottom steps should be located in plan, and then the distance between them divided equally by the number of treads.
- 3.3.10 On the exterior, each wall is measured with a continuous string, corner to corner. The string should pick up all significant features, such as door and window openings.
- 3.3.11 It may be necessary to take diagonal dimensions from the corners of the main block of a building to the corners of an ell or wing, in order to determine orthogonality.
- 3.3.12 Exterior steps and porches should be located in the overall wall strings, but may be

measured as separate details.

### **3.4.0 SKETCHING AND MEASURING ELEVATIONS**

- 3.4.1 Elevations are measured with continuous vertical dimension strings. Typically, strings are taken at every corner, and through door and window openings.
- 3.4.2 It is important that all vertical strings be located in reference to a horizontal datum. The datum may be an actual feature of the structure, such as a horizontal brick course or the bottom edge of a siding board, as long as the feature is consistently level around the entire building. Otherwise, it may be necessary to cast a datum using a string and line level. Alternatively, a laser total station may be used to vertically locate significant points on the building.
- 3.4.3 Multi-story buildings may require more than one horizontal datum.
- 3.4.4 If brick coursing is consistent and regularly-spaced, it is not necessary to measure every course. Courses which tie into significant features of the elevation (such as window heads and sills) are located vertically, and the intervening courses counted and divided equally when drawn. A similar technique may be used with regularly spaced horizontal wood siding.
- 3.4.5 For buildings which are significantly out of plumb, it may be necessary to hang a plumb bob at the corner and measure to the plumb bob's string as part of the horizontal string of measurements, in order to capture the lean of the building for the elevation.
- 3.4.6 For elevation features which will be seen foreshortened in the final elevation drawings (such as the side walls of projecting polygonal bays), it is often useful to draw them as separate "straight-on" (true) elevation details, for ease and comprehension in measuring.
- 3.4.7 Where porches or roof overhangs obscure exterior walls in elevation, the wall elevation is typically sketched with the porch or overhang removed, for ease and clarity in measuring. The elevation of the porch or overhang is then sketched and measured as a separate detail.
- 3.4.8 Round columns are measured circumferentially at regular, precise vertical intervals (such as at 1'-0" intervals on a ten-foot tall column) in order to determine entasis.

### **3.5.0 SKETCHING AND MEASURING SECTIONS**

- 3.5.1 In general, sections should be cut where they provide the most information. Sections are typically cut to show unusual spatial situations, such as double-height

spaces, or through stairs to show landing levels. Sections are also useful to show the alignment (or lack thereof) of features from one floor to the next, such as fireplaces.

- 3.5.2 Sections are cut through door and window openings, wherever practical. All rooms shown on any given floor level of a section should be in alignment. In a given room, a section cut line may jog if there are openings on opposite walls which do not line up. However a section line may not jog from one room to a room behind it, through a wall seen in elevation. In general, excessive joggling of section cut lines in plan should be avoided.
- 3.5.3 The plane of a section cut may jog from one floor to the next, provided there is a complete separation of the two floors. (For example, this would not be possible if the section was cutting through a stair, which occurs at the same location on both floors.) However care should be taken so that the section “makes sense” on the exterior, at the point where the sections cuts exit the building.
- 3.5.4 Care should be taken when sketching sections to include features which will be seen in the background, or through openings, such as the rear wall of a room seen through an arched opening. For the sake of clarity, it is usually best to draw and measure such features or wall elevations on a separate field note sketch.
- 3.5.5 Sections are measured in a manner similar to that of elevations, using vertical strings. Strings should be taken through openings in floors wherever possible, such as at stair openings, where floor-to-floor heights may be obtained as part of the vertical string. It is also important to tie the section dimensions to any exterior datum lines used to measure the elevations.

### **3.6.0 SKETCHING AND MEASURING DETAILS**

- 3.6.1 Details such as door jambs, chair rails, etc, are often repeated from room to room in a building. In such cases, it is useful to create a schedule of typical details, in order to avoid unnecessary repetition when measuring. It is of utmost importance, however, that the details be clearly and systematically referenced to their appropriate location(s) on the plan, elevation, and section field notes.
- 3.6.2 Moldings, such as door jambs, window jambs, balusters, hand rails, base boards, chair rails, and crown moldings, are best captured using a toothed molding comb (profile gauge) and traced at full scale onto the field note paper.
- 3.6.3 Some details, such as incised inscriptions, may be best captured by a simple rubbing, using a pencil and the field note paper.
- 3.6.4 Digital photographs are useful for capturing small, relatively flat details. Such details should be photographed as straight on as possible, with a minimum of

perspective distortion. It is important to include some kind of scaling device in the image, for future reference.

- 3.6.5 Details too large to be sketched at full scale should be sketched proportionately, and at an appropriately large size, on the field note paper and measured accordingly.

## **4.0.0 DRAWING PRODUCTION**

### **4.1.0 HAND DRAWINGS**

- 4.1.1 For hand drawings, pre-printed sheets of HABS standard mylar are available from the HABS office, upon request.
- 4.1.2 HABS drawings produced using traditional hand drawing methods require that each individual drawing be executed first as a preliminary hardline precision-drafted pencil drawing. In this process, it is necessary for the final scale of the drawing to be determined prior to commencing the pencil drawing. (See Section 5.2.0 concerning drawing scale.)
- 4.1.3 Each pencil drawing is subsequently affixed to a drafting surface, a sheet of pre-printed HABS mylar is placed over it, and the final drawing is produced by tracing the pencil drawing with technical ink pens (Koh-I-Nor Rapidograph, or the equivalent). Only waterproof black ink (Pelikan FT, or the equivalent) may be used.
- 4.1.4 Both sides of the mylar may be used. It is often advantageous to draw the major outlines of the building on the front, while using the back for finer detail, such as wall poché and joint lines.

### **4.2.0 COMPUTER-AIDED DRAFTING (CAD) DRAWINGS**

- 4.2.1 HABS does not require the use of any particular layering system or CAD software. HABS recommends using a layering system in conformance with the AIA CAD Layer Guidelines.
- 4.2.2 Predefined hatch patterns for surfaces (such as brick coursing or roof shingles in elevation, or herringbone brick paving in plan) should never be used, as they do not typically represent actual conditions. These items should be measured and drawn accordingly.
- 4.2.3 Do not use solid grey tones to render surfaces, as they reproduce poorly when drawings are scanned for digitization and reproduction.
- 4.2.4 Individuals donating a set of drawings produced using CAD to the HABS Collection may wish to include a compact disc of the CAD files (including the pen table and any special fonts used) as part of the field notes.

### **4.3.0 LINE WEIGHTS**

- 4.3.1 The following line weights are used for drawings which will be plotted at 1/4"=1'-0". (Delineators producing hand drawings should use the closest equivalent technical

pen.)

.1mm

Joint lines, such as floor boards or brick coursing (no change of surface plane); fine ornamentation; topographic lines on site plans

.2mm

Light edges (small change in surface planes)

.3mm

Medium edges

.4mm

Heavy edges (indicating major depth in plan or elevation)

.5mm

Material cut lines in plan and section; building outlines in elevation

.6mm

Ground lines in elevation

4.3.2 Line weights may need to be adjusted for drawings at larger and smaller scales.

#### **4.4.0 SITE PLANS**

4.4.1 The roof plans of buildings are shown in site plans. A vignette of the roofing material pattern (shingles, standing metal seams, etc) should be indicated.

4.4.2 Tree trunks are drawn as circles, sized according to their circumferential measurements. Tree canopies are drawn as circles with an irregular edge. Deciduous trees should be distinguished from coniferous trees. When drawing in CAD, it is acceptable to create a block for each type of tree, and insert them scaled appropriately for each individual tree.

4.4.3 Open areas, such as lawns or fields, are typically stippled.

4.4.4 A vignette of paving patterns (brick, slate, etc) should be shown.

4.4.5 Delineators should refer to the Drawings Guidelines of the Historic American Landscapes Survey for other graphic standards, as well as for instructions regarding labeling and layout of Site Plans.

#### **4.5.0 PLANS**

- 4.5.1 Masonry, concrete and adobe walls cut in plan are poché'd, using standard materials symbols. Different periods of construction are typically indicated by changing the rotation of the poché pattern. Wood frame and log walls in plan are shown without poché.
- 4.5.2 Doors between rooms are shown swinging 90 degrees. Cabinet doors and casement windows are shown swinging 45 degrees.
- 4.5.3 A single (not double) break line is shown on stairs.
- 4.5.4 At a minimum, a vignette of the floor joint pattern (floor boards, tiles, etc) should be shown in each room. Fireplace hearths should also be indicated. (Carpeted, terrazzo, and linoleum floors are shown blank.)
- 4.5.5 Hidden and missing items are indicated with a dashed line. Overhead items are indicated with a dot-dash line.

#### **4.6.0 ELEVATIONS**

- 4.6.1 For brick buildings, horizontal brick joints are drawn across the entire elevation. A vignette of vertical joints, which have been measured, should also be drawn, typically in reference to one of the building corners. Do not use standard CAD brick hatch patterns, as they do not typically represent actual conditions.
- 4.6.2 Individual bricks are drawn in round, jack, and flat arches.
- 4.6.3 For fieldstone buildings, a vignette of the fieldstone pattern should be drawn, typically at the building corners and around openings.
- 4.6.4 For roofs seen in elevation, a vignette of the roofing material should be shown. Do not use standard CAD shingle hatch patterns.
- 4.6.5 Doors seen in elevation are always shown closed. Do not use diagonal dashed lines to indicate door swings.
- 4.6.6 Windows seen in elevation are drawn as if the glass was an opaque surface. Do not use diagonal "scratch" lines to indicate glass.
- 4.6.7 Depth in elevation is indicated by the use of appropriate line weights at the edges of openings. Do not use shadows or shading to indicate depth.

#### **4.7.0 SECTIONS**

- 4.7.1 No poché is shown in walls and floors cut in section.

4.7.2 Where a section cuts through a door opening, the opening is drawn as if the door was missing.

#### **4.8.0 AXONOMETRIC DRAWINGS**

4.8.1 Axonometric drawings can be useful for depicting the unusual massing of a building and/or for showing structural details. For particularly complicated structural joints, exploded axonometrics can be useful.

4.8.2 Unlike standard two-dimensional plans, elevations, and sections, axonometric drawings are scalable in relation to three axes. The orientation of the axes should be clearly indicated with a diagram on the drawing.

#### **4.9.0 PERSPECTIVE DRAWINGS**

4.9.1 Perspective drawings should be avoided, since they are not scaled drawings and do not supply accurate dimensional information.

#### **4.10.0 INTERPRETIVE DRAWINGS**

4.10.1 Interpretive drawings can be useful for helping to understand a building. Examples include drawings which show the building restored to a certain date, drawings which document the changes to the building over time, or drawings which explain an important circulation pattern through the building. Where relevant, sources for historical information should be cited on the drawings.



## **5.0.0 DRAWING SET ORGANIZATION, LAYOUT, AND PLOTTING**

### **5.1.0 DRAWING SHEET SIZE AND ORIENTATION**

5.1.1 HABS drawing sheets are available in three standard sizes, noted as follows, along with their respective allowable drawing areas:

19" x 24"	15 7/8" x 20 1/8"
24" x 36" (Arch D)	21 3/4" x 32"
34" x 44" (ANSI E)	31 7/8" x 40"

5.1.2 Do not mix sheet sizes in a single set of drawings.

5.1.3 The 19" x 24" size sheet is typically oriented with the title block along the bottom.

5.1.4 The two larger size sheets are typically oriented with the title block along the right side. However, for buildings which are particularly long and narrow in plan, or tall and narrow in elevation, it may be necessary to orient the larger sheets with the title block along the bottom.

5.1.5 Plans are always oriented so that the principal entrance to the building faces the bottom of the sheet.

### **5.2.0 DRAWING SCALE**

5.2.1 Drawings should be drawn or plotted at a scale which is large enough to provide useful information. The scale should be determined in relation to the sheet sizes noted in Section 5.1.1. Drawings should not crowd the sheet border; it is important to leave adequate space around the drawings for dimensions, titles, etc.

5.2.2 Site plans are typically drawn/plotted at an engineering scale, such as 1"=20'-0", 1"=30'-0", 1"=40'-0", etc.

5.2.3 1/4"=1'-0" is a useful scale for most building plans, elevations, and sections. Very small buildings may need to be drawn/plotted at a larger scale.

5.2.4 For very large buildings, it may be necessary to draw/plot them at a small scale, in order to fit the entire drawing on a single sheet. In that case, it is often useful to show the entire building first on a single sheet at a small scale, and then show it on subsequent sheets in pieces (with appropriate match lines) at a larger scale, in order to provide adequate information.

5.2.5 Plans and elevations are always drawn/plotted at the same scale. Sections are typically drawn/ plotted at the same scale as the plans and elevations. However,

because sections sometimes reveal a high level of detail on the interior, they may be drawn/plotted one scale larger. (Whichever scale is chosen, however, all sections must be drawn/plotted at the same scale.)

- 5.2.6 Details such as doors, windows, and fireplace mantels are often shown in elevation and/or section at 1"=1'-0" or 1½"=1'-0".
- 5.2.7 Molding profiles are shown at full scale whenever possible.
- 5.2.8 Avoid the use of too many different scales in a single set of drawings. Thus a typical set of HABS drawings might include plans and elevations at 1/4"=1'-0", sections at 1/4"=1'-0" or 3/8"=1'-0", door and window elevation details at 1"=1'-0", and molding profiles at full scale.

### **5.3.0 DRAWING SEQUENCE**

- 5.3.1 The standard sequence for a set of HABS drawings is as follows: Cover Sheet (if included), Interpretive Drawings (if included), Site Plan, Plans, Elevations, Sections, and Details.
- 5.3.2 The sequence for plan sheets should begin with the lowest level, then work up through the building. Thus, a typical sequence might be: Basement Plan, First Floor Plan, First Floor Reflected Ceiling Plan, Second Floor Plan, Attic Plan, Roof Plan.
- 5.3.3 Where more than one plan is laid out on a single sheet, the lower level plan should always be placed to the right and/or below the higher level plan.
- 5.3.4 The sequence of elevations should begin with the front (entrance) elevation, and then move systematically either clockwise or counter-clockwise around the building.
- 5.3.5 Where more than one elevation is laid out on a single sheet, the front elevation should be placed to the right, with the adjacent elevation, moving clockwise around the building, to the left.
- 5.3.6 If a building has only one plan, and there is room for both the plan and an elevation on a sheet, the plan should be positioned below the elevation.

### **5.4.0 SHEET LAYOUT**

- 5.4.1 In general, delineators should aspire to sheet layouts which are aesthetically pleasing. For example, where a sheet contains a single drawing (such as a plan), the drawing should be centered on the sheet, both horizontally and vertically. Likewise, where multiple, but similar, drawings are to be placed on a sheet, a balanced, symmetrical layout is preferred.

- 5.4.2 Avoid excessive amounts of white space on a sheet. For example, if the placement of a section drawing in the center of a sheet results in large blank areas around the drawing, the blank areas may be filled with details and profiles appropriate to the section.
- 5.4.3 Conversely, avoid sheet layouts which are too dense with drawings (especially at too many different scales) and other information (notes, etc). As a general rule, a drawing sheet should remain perfectly legible when reduced to 8 ½" x 11" size.

### **5.5.0 COVER SHEETS**

- 5.5.1 A Cover Sheet is not required for a set of HABS drawings. However, it is often a useful means of providing information about the project, especially when there is not an accompanying historical report.
- 5.5.2 The Cover Sheet should include a short statement. The statement should provide a brief history of the building, discuss the building's significance, describe the building's construction, and credit the individuals and/or organizations responsible for the building's documentation. Avoid lengthy statements and Cover Sheets which are all text.
- 5.5.3 A Cover Sheet also typically includes one or more images. The image may be one of the drawings for the set, such as the Site Plan or a particularly significant detail. Other images often found on Cover Sheets include a location map (see Section 5.5.5), a historic map (such as a Sanborn map), or a historic view of the building. (Any historic image used in a set of HABS drawings should be appropriately credited.) Avoid the use of photographs or other greyscale images.
- 5.5.4 Because HABS drawings are in the public domain, any image used on a Cover Sheet (or elsewhere in the set of drawings) must be copyright-free, or accompanied with an appropriate copyright release when transmitted to the HABS office.
- 5.5.5 The inclusion of a location map is often useful, especially for buildings located in rural areas. USGS maps are frequently used as location maps on HABS drawings. When a USGS map (or, more likely, a portion thereof) is used, the quadrangle must be identified, and the Universal Transverse Mercator (UTM) grid tick marks included along the edges of the map, appropriately labeled. Mile and kilometer scales, along with a north arrow, must be included. The location of the building should be indicated graphically on the map (either circled or with an arrow), and the building's coordinates, either UTM (zone.easting.northing) or Global Positioning System (GPS), listed.

### **5.6.0 TEXT AND FONTS**

- 5.6.1 A single text style or font should be used throughout the entire set of drawings, including the title blocks. Do not use multiple fonts. A sans serif or simple serif font is preferred. Avoid elaborate fonts.
- 5.6.2 1/4" lettering is standard for individual drawing titles. 1/8" lettering is standard for all other text. Lettering should remain legible when drawing sheets are reduced to 8 1/2" x 11" size.
- 5.6.3 Other than Cover Sheet statements, all text should be upper case throughout the set of drawings, including the title blocks.
- 5.6.4 For CAD drawings, Windows (true type) fonts are preferred to standard CAD fonts.
- 5.6.5 For traditional hand drawings, lettering must be inked using a Leroy or similar mechanical lettering system. (Press-on lettering or "stickyback" lettering is not archival, and therefore may not be used.)

#### **5.7.0 LABELING, DIMENSIONS, AND NOTES**

- 5.7.1 Each individual drawing on a sheet must be labeled with a title and notation of the scale.
- 5.7.2 A pair of scale bars, English and the corresponding metric scale, is required for each scale used on a sheet of drawings (including full scale). If multiple drawings at the same scale are placed on the same sheet, only one pair of scale bars is required for that scale on that sheet.
- 5.7.3 Any sheet with a Site Plan or Plan must include a north arrow.
- 5.7.4 Every drawing on a sheet, other than full scale drawings, should have at least one string of dimensions. Plans typically have both horizontal and vertical dimension strings. Elevations and sections typically have only vertical strings of dimensions.
- 5.7.5 Dimension strings should be drawn off to the side, top or bottom of a drawing. Avoid dimension strings across the drawing itself. Avoid lengthy extension lines.
- 5.7.6 Avoid excessive dimensioning. For example, in plans it is not necessary to dimension every opening, only major massing features of the building.
- 5.7.7 Dimension strings should measure features visible in the drawing. Thus floor levels should be dimensioned in sections (not elevations).
- 5.7.8 In plans, room names should be indicated, where known, with a label in the center of the room. For significant rooms, it may also be useful to note the overall room

dimensions, immediately underneath the room name.

- 5.7.9 In plans, the direction of stairs should always be indicated with an arrow and labeled “UP” or “DOWN”. The direction is always in reference to the floor level being shown.
- 5.7.10 Descriptive and explanatory notes can be useful, in reference to building materials, alterations, etc. However, excessive notation should be avoided, especially where information might be better imparted in a HABS historical report. Notes and tables (such as a plant list or a framing schedule) should be located off to the side, or above or below a drawing, rather than on the drawing itself. For plans, sections, and elevations, referencing notes with numbers and a key is preferable to using leaders and arrows.

### **5.8.0 TITLE BLOCK**

- 5.8.1 The center box of the title block on all HABS sheets contains the building name and address, in two lines. The building name is written in the upper line in 1/4" text. The building address is written in the lower line in 1/8" text. Both lines are centered within the space.
- 5.8.2 Building names should be assigned in accordance with the HABS Historical Report Guidelines.
- 5.8.3 The building address typically consists of four elements: the street address; the town or city (or vicinity, for rural sites); the county; and the state.
- 5.8.4 Do not use abbreviations; all words should be spelled out (for example, “STREET” instead of “ST”, “COUNTY” instead of “CO”, etc).
- 5.8.5 The project name and date (year) of documentation may be written in the left box of the title block, centered above “NATIONAL PARK SERVICE”.
- 5.8.6 The delineator(s) for each sheet should be listed after the “DRAWN BY:” immediately above the left box of the title block, in a single line. If no project name is entered, the documentation date should be noted at the end of the list of names.
- 5.8.7 The HABS number for the project should be written in the appropriate box, if known. Otherwise, the box should be left blank, and the number will be assigned by the HABS office upon receipt of the drawings.
- 5.8.8 Each sheet of the set should be numbered accordingly, beginning with Sheet 1 (typically the Cover Sheet).

5.8.9 The far right box of the title block (Library of Congress Index Number) should be left blank.

#### **5.9.0 FINAL PLOTTING**

5.9.1 For CAD drawings, the standard HABS title block and sheet border, in AutoCAD “.dwg” format, is available upon request from the HABS office. The lines of the title block may not be altered in any manner. Users may not create their own title block. Submissions to the HABS office of projects using a non-standard title block will not be accepted.

5.9.2 HABS drawings are black line drawings. Only black ink may be used when plotting. Submissions to the HABS office using colored inks will not be accepted.

5.9.3 Final plots must be made on vellum, as per the *HABS Transmittal Guidelines*.

5.9.4 Final plots must be made using a laser plotter. (Other types of plotters, such as inkjet plotters, do not meet the standards of the Library of Congress for archival stability.)