

NATIONAL REGISTER BULLETIN

Technical information on the the National Register of Historic Places:
survey, evaluation, registration, and preservation of cultural resources



U.S. Department of the Interior
National Park Service
Cultural Resources
National Register, History and Education

HOW TO IMPROVE THE QUALITY OF PHOTOGRAPHS FOR NATIONAL REGISTER NOMINATIONS



The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to tribes.

This material is partially based upon work conducted under a cooperative agreement with the National Conference of State Historic Preservation Officers and the U.S. Department of the Interior.

*Cover: Wet-plate Photography in the Field. Utah, 1872.
John K. Hillers, a member of the Powell Survey Team, examining one of his plates.
(National Park Service Historic Photograph Collection)*

NATIONAL REGISTER BULLETIN

HOW TO IMPROVE THE QUALITY OF PHOTOGRAPHS FOR NATIONAL REGISTER NOMINATIONS

BY
FREDERIC J. ATHEARN
including
On the Road
by
Jeff Dean

U.S. DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE
NATIONAL REGISTER, HISTORY AND EDUCATION
NATIONAL REGISTER OF HISTORIC PLACES
1979, REVISED 1987, 1996, 1998

TABLE OF CONTENTS

Preface	iv
Acknowledgments	v
Introduction	vi
I. A Brief History of Photography and the Photographic Process	1
Photographic Films	2
Photographic Prints	3
II. Cameras and Lenses	5
Thirty-Five-Millimeter Cameras and Lenses	5
Medium-Format Cameras and Lenses	7
Large-Format Cameras	8
Basic Tips on Using Lenses and Filters to Improve Photographs	9
III. Documenting Historic Places on Film	10
National Register Guidelines for Photographic Coverage	10
Historic Buildings, Structures, Sites, and Objects	11
Interiors	12
Historic Engineering Properties	13
Bridge, Trestles, and Aqueducts	14
Railroads	14
Roads and Trails	16
Historic Districts	16
Landscapes, Streetscapes, and Battlefields	16
Archeological Properties	17
Aerial and Oblique Photography	18
<i>ON THE ROAD</i> by Jeff Dean	19
IV. Preparing Photographs for Submission to the National Register	25
Basic Requirements	25
Papers	25
Labeling Photographs	25
V. Storage of Film and Prints	26
Appendix I: Photography for the Historic American Buildings Survey and the Historic American Engineering Record	27
Bibliography	29
Glossary	31
List of National Register Bulletins	33

PREFACE

Photographs are an essential part of all National Register of Historic Places nomination documentation because they illustrate the property at the time it was nominated, provide a record of the property's integrity and distinguishing features, and support the nomination's discussion of the property's physical description and historic significance. As of 1997, the National Register included documentation on more than 69,000 historic properties. This record of America's heritage is unmatched in its comprehensiveness.

Because National Register nominations form a permanent record of listed historic properties, it is important that they include high quality photographs. Planners, educators, researchers and other members of the public who consult National Register nomination files rely on the quality of the written and visual documentation. In addition, National Register photographs are frequently used in publications to illustrate various kinds of historic properties. The purpose of this bulletin is to improve the quality of photographs in National Register nominations by providing a clear explanation of the technical aspects of photography, as they pertain to National Register requirements. The bulletin is not a comprehensive guide to architectural photography, nor is the advice it gives the last word on the subject, rather it is intended to be a useful guide for nonprofessional photographers who are called upon to submit photographs to the National Register.

We are pleased that Dr. Frederic J. Athearn of the Colorado State Office of the Bureau of Land Management wrote this bulletin. The American Association for State and Local History awarded him a Certificate of Commendation for his pioneering work in photographic documentation. The text for this bulletin is based, in part, on Dr. Athearn's *A Window to the*

Past—A View to the Future: A Guide to Photodocumenting Historic Places, Bureau of Land Management, Cultural Resource Series, No. 30, 1994.

Jeff Dean, former Wisconsin State Historic Preservation Officer, added a section to this bulletin based on his experiences since 1970 in the field of historic preservation. Dean was awarded a Certificate of Commendation in Preservation by the National Trust for Historic Preservation for his 1981 book, *Architectural Photography*, published by the American Association for State and Local History. He

teaches small-format architectural photography for the Mount Carroll Center for Applied Photographic Arts of the Campbell Center for Historic Preservation, Mount Carroll, Illinois.

Carol D. Shull

Keeper, National Register of Historic Places
National Register, History and Education
National Park Service
U.S. Department of the Interior



The ancient Anasazi ruins at Mesa Verde, Colorado. (National Park Service Historic Photograph Collection. William Henry Jackson, 1874)

ACKNOWLEDGMENTS

We would like to thank Frederic J. Athearn, formerly with the Colorado State Office, Bureau of Land Management, Denver, Colorado, for writing the text of the bulletin. And Jeff Dean, former State Historic Preservation Officer and Director, Historic Preservation Division, State Historical Society, Wisconsin, for his account of photography on the road for the National Register. And to Marilyn Nickels, Manager, Cultural Heritage Programs, Bureau of Land Management for her support and encouragement in the initial stages of planning for the bulletin. In addition to Athearn, Dean, and Nickels, we would especially like to thank Historic American Buildings Survey photographer Jack Boucher for his

invaluable editorial comments on the technical aspects of the manuscript.

This bulletin was developed under the general editorship of Carol D. Shull, Keeper of the National Register of Historic Places. Beth L. Savage and Sarah Dillard Pope coordinated the publication of the fourth edition of this bulletin. Antoinette J. Lee, Mary F. McCutchan, Tanya M. Velt, Rama R. Badamo, Susan Begley, Lorena Gonzales and Matthew Nowakowski provided coordination, editorial and technical support for earlier editions. We would also like to thank Marsha S. Baenziger, Archeologist, Department of Agriculture; Nicholas Dean, Photographer, Edgecombe, Maine; Tom Durant, Curator, National Park Service Historical Photograph Collec-

tion, Harper's Ferry, West Virginia; Charles Gutierrez, Technical Director, Hasselblad USA Inc., Fairfield, New Jersey; Dale Heckendorn, Colorado Historical Society; Peter Kurtze, Maryland Historical and Cultural Programs; Margaret Pepin-Donat, CoTeam Leader, Cultural Resources, Pacific Great Basin System Support Office, San Francisco, California; George Miles, Curator, Yale Collection of Western Americana, The Beinecke Rare Book and Manuscript Library, New Haven, Connecticut; and the staff of the National Register of Historic Places for their helpful suggestions and support.

Comments on this publication may be directed to: Keeper, National Register of Historic Places, National Park Service, 1849 C Street, NW, NC 400, Washington, D.C. 20240.

INTRODUCTION

This bulletin updates the 1996 edition, which replaced the 1987 version of *Photographs for National Register Nominations*. It provides information on preparing photographs for inclusion in National Register of Historic Places nominations; the use of various types of cameras, films, and techniques for photographing historic places; and guidance on documenting several types of historic properties. It provides a detailed description of the photographic process, guidance on the care and storage of images, and ideas on documenting various types of properties.

Also included is a summary of the requirements for Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) documentation. This information helps explain what is involved in preparing formal documentation for historic properties. While this level of documentation is not required for National Register nominations, the more photographs made for the National Register approach these standards, the better they will serve the needs of present and future generations.

This bulletin also supplements existing guidance in *How to Complete the National Register Registration Form*, pp. 63-65, and gives further details on the use of photography to document nominated properties. Other National Register guidance regarding photography is found in: *Guidelines for Local Surveys: A Basis for Preservation Planning*, pp. 50-51; *Guidelines for Evaluating and Registering Historical Archeological Sites and Districts*, pp. 36-37; and *Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields*, p. 17.



"Matthew Brady's New Photographic Gallery, Corner of Broadway and Tenth Street, New York" Harper's Weekly, September, 1862, p. 106 (Prints and Photographs Division, Library of Congress)

I. A BRIEF HISTORY OF PHOTOGRAPHY AND THE PHOTOGRAPHIC PROCESS

Until the invention of cameras and photographs, followed by the development of a practical way to print photographs in newspapers, the reading public pictured an event with the aid of an artist's rendering. In the 1860s, photographers recorded some events in American history for the first time. When photographer Matthew Brady exhibited photographs of corpses on the battlefield in 1862 at his New York City gallery, the public saw the gruesome realism of broken bodies for the first time. (See below.)

As the settlers pushed westward, photographers were there. They recorded the completion of the Transcontinental Railroad. Who has not seen the famous picture of the two

locomotives meeting at Promontory Point, Utah? (See page 2.) Photographer, William Henry Jackson, spent years in the West with Ferdinand V. Hayden's expeditions recording the landscape. Jackson was the first to photograph Mesa Verde in Colorado (1874) (See page iv.) and the legendary Mount of the Holy Cross (1873), near Leadville, Colorado, among other places. (See page 2.)

The first true photographs were exposed on metal that had been sensitized to accept an image. *Daguerréotypes*, named for their French inventor L.J.M. Daguerre in 1837, were metal sheets upon which a positive silver image was affixed. (See page 3.)

The inventor of the first process which used a negative from which multiple prints were made was William Henry Fox Talbot, a contemporary of Daguerre.

Tintypes, patented in 1856 by Hamilton Smith, were another medium that heralded the birth of photography. A thin sheet of iron was used to provide a base for light-sensitive material, yielding a positive image.

Photography advanced considerably when sensitized materials could be coated on plate glass. The first glass negatives were wet plate. They had to be developed quickly before the emulsion dried. (In the field this meant carrying along a portable



Confederate dead from one of Stephen D. Lee's batteries lying east of the Dunker Church, Antietam, near Sharpsburg, Maryland, September, 1862. (National Park Service Historic Photograph Collection. Alexander Gardner, 1862)



East Meets West at Promontory Point, Utah. *Representatives from the Central Pacific and Union Pacific Railroads shake hands over the final spike in the Transcontinental Railroad, 1869. (Yale collection of Western Americana, Beinecke Rare Book and Manuscript Library. Andrew Joseph Russell, 1869)*



Mount of the Holy Cross, *near Leadville, Colorado. (National Park Service Historic Photograph Collection. William Henry Jackson, 1874)*

darkroom.) By 1879, a dry plate process had been invented and patented which freed the photographer from the necessity of developing each print immediately.

In 1889, George Eastman, realizing the potential of the mass market, used a newly invented film with a base that was flexible, unbreakable, and could be rolled. Emulsions coated on a cellulose nitrate film base, such as Eastman's, made the mass-produced box camera a reality. Using box cameras, amateur photographers began to document everyday life in America. Eastman's first simple camera in 1888 was a wooden, light-tight box with a simple lens and shutter that was factory-filled with film. The photographer pushed a button to produce a negative. Once the film was used up, the photographer mailed the camera with the film still in it to the Kodak factory where the film was removed from the camera, processed, and printed. The camera was then reloaded with film and returned.

In the early 1940s, commercially viable color films (except *Kodachrome*, introduced in 1935) were brought to the market. These films used the modern technology of dye-coupled colors in which a chemical process connects the three dye layers together to create an apparent color image. This system is still used for color.

PHOTOGRAPHIC FILMS

Black and white film is long lasting and more permanent than color film. The first flexible films, dating to 1889, were made of cellulose nitrate, which is chemically similar to guncotton. A nitrate-based film will deteriorate over time, releasing oxidants and acidic gasses. It is also highly flammable. Special storage for this film is required. It is highly explosive and should be kept at low temperatures, in sealed bags, in fireproof vaults.

Nitrate film is historically important because it allowed for the development of roll films. The first flexible movie films measured 35-mm wide and came in long rolls on a spool. In the mid-1920s, using this technology, 35-mm roll film was developed for the camera. By the late 1920s, medium-format roll film was created. It



The General Post Office, Washington, D.C., 1839, designed by architect Robert Mills. This photo is a copy of a daguerreotype of the building taken in 1846 by John Plumbe. (Library of Congress Daguerreotype Collection)

measured six centimeters wide and had a paper backing making it easy to handle in daylight. This led to the development of the twin-lens-reflex camera in 1929. Nitrate film was produced in sheets (4 x 5-inches) ending the need for fragile glass plates.

Triacetate film came later and was more stable, flexible, and fireproof. Most films produced up to the 1970s were based on this technology. Since the 1960s, polyester polymers have been used for gelatin base films. The plastic film base is far more stable than cellulose and is not a fire hazard.

In the past decade, film has become far less grainy and is greatly reduced in contrast. New technology has produced film with T-grain

emulsions. These films use light-sensitive silver halides (grains) that are T-shaped, thus rendering a much finer grain pattern. Films like this offer greater detail and higher resolution, meaning sharper images. The traditional rule that slower film produces finer grain is no longer true. The finer grained films are still slower, that is, the ISO rating is lower, but they are much less grainy and have much less contrast.

A recent development in black and white film is a process that uses color film technology to develop and print black and white films. It is easy to take a roll of this film to a one-hour processor to get back prints quickly. However, the film has a purple tint to it, as do the prints. Additionally,

because of the color processing, the life of the film or prints is highly suspect. (National Register requirements forbid the use of such films for nominations because, like all color films, they do not meet the documentation standards set by the National Register.)

PHOTOGRAPHIC PRINTS

Traditionally, linen rag papers were used as the base for making photographic prints. Prints on this fiber-base paper coated with a gelatin emulsion are quite stable when properly processed. Their stability is

enhanced if the print is toned with either sepia (brown tone) or selenium (light, silvery tone).

Paper will dry out and crack under poor archival conditions. Loss of the image can also be due to high humidity, but the real enemy of paper is chemical residue left by photographic fixer. (See **Glossary**.) In addition, contaminants in the water used for processing and washing can cause damage. If a print is not fully washed to remove all traces of fixer, the result will be discoloration and image loss. Staining also can occur on improperly processed negatives. The accepted current standard for adequate washing to remove the fixer is a minimum of 30 minutes with a total change of water every five minutes. (Commercial chemical preparations may be added to the bath to speed up the process.)

A recent innovation in papers is the resin-coated, or water-resistant, paper. The idea is to use normal linen fiber-base paper and coat it with a plastic (polyethylene) material, making the paper water-resistant. The emulsion is placed on a plastic covered base paper. The problem with resin-coated papers is that the image rides on the plastic coating, and is susceptible to loss. Because resin-coated paper is considered unstable, the Prints and Photographs Division of the Library of Congress will not accept prints made with it. The National Register will accept prints on resin-coated paper provided they contain no evidence of residual chemicals, fading, or yellowing.

Only fiber-base paper, specially processed to archival standards, is acceptable for archival purposes. Most of today's commercially made prints are on resin-coated paper. Whether the print is from the corner drug store or a professional laboratory, it is almost certain to be made on resin-coated paper. As stated above, resin-coated paper is acceptable for National Register photographs provided the prints made with it have been properly processed and washed. Machine processed prints such as those made with a stabilizer are not acceptable because the chemicals have not been completely washed out.

Another film medium that is not suitable for photographic permanence is color. Color film and prints are not stable because organic dyes are used to make the color image. The image will quite literally disappear from the



Taken near Savannah, Georgia this photograph shows a typical field set-up of the Civil War era. The wagon carried chemicals, glass plates, and negatives. The buggy to the left could be used as a field darkroom. Before a reliable, dry-plate process was invented (ca. 1879) photographers had to develop negatives quickly before the emulsion dried. (Library of Congress, Prints and Photographs Division)

film or paper base as the dyes deteriorate. *Kodachrome*, dating to the first third of the 20th century, appears most stable and examples exist that are half a century old. Color transparency films by *Fuji* of Japan are proving to be stable, but only age (not accelerated aging tests) will reveal the truth.

Most recently, new techniques, along with some old ones, are creating what is called permanent color prints. The old fashioned dye transfer process has been reintroduced by two small companies. New printing methods using computer-generated thermal dye prints, digital images, supposedly highly stable pigments,

and other technology claim to offer permanency for color media. It remains to be seen whether these claims can be substantiated. Other printing methods such as dye sublimation (a process for making paper prints that is created on a computer as a digital image), color *Xerox*, color laser, ink jet color, and other computer printers are so new that there is no data on how long these media will survive. Digital permanence is still a matter of speculation. Jeff Rothenberg in an article in *Scientific American* has recently raised disturbing questions about the longevity of electronic media. (See **Bibliography** for citation.)

II. CAMERAS AND LENSES

THIRTY-FIVE-MILLIMETER CAMERAS AND LENSES

The most common photographic equipment today is the 35-mm camera. There are several varieties, including: fully automatic cameras, commonly called “point-and-shoot” cameras; single-lens-reflex cameras, and range-finder cameras. Many people use “point-and-shoot” cameras. They are fully automatic; some have a manual override feature. Their price ranges from \$50 to \$1,000. The more expensive models have more features. Most “point-and-shoot” cameras have a moderately wide-angle 35-mm lens, useful for architectural photography, particularly in tight urban settings. However, this lens can increase distortion when used fairly close to the subject if the camera is not leveled.

“Point-and-shoot” cameras are not particularly suitable for photographic documentation, because they cannot be easily adjusted for variations in lighting, or difficult lighting situations. While they meter light automatically, they sometimes meter it inaccurately. In difficult or unusual lighting conditions these cameras will simply not provide a good photograph. Under normal conditions, with bright light, “point-and-shoot” cameras will provide adequate photographs for National Register nominations. “Point-and-shoot” cameras work best outdoors, in bright light, using a moderately fast film (ISO 200). Normally the built-in flash for a “point-and-shoot” camera is low-powered, making it unsuitable for interior shots. Where there is *backlighting* (see **Glossary** for definition) or low lighting, “point-and-shoot” cameras may not produce good photos. (More expensive



Point-and-Shoot Camera. (Frederic Athearn, 1995)



35-mm Single-Lens-Reflex Camera. (Frederic Athearn, 1995)

models may have override features or better flash units that can overcome these problems.)

A better choice for documentary photography than a “point-and-shoot” camera is a single-lens-reflex (SLR) camera. With this camera, you look through the camera lens, making framing and focusing very easy. The lenses are usually interchangeable, so various focal lengths can be used. Another advantage is that shutter speeds and lens openings [f-stops] are adjustable, either manually or automatically.

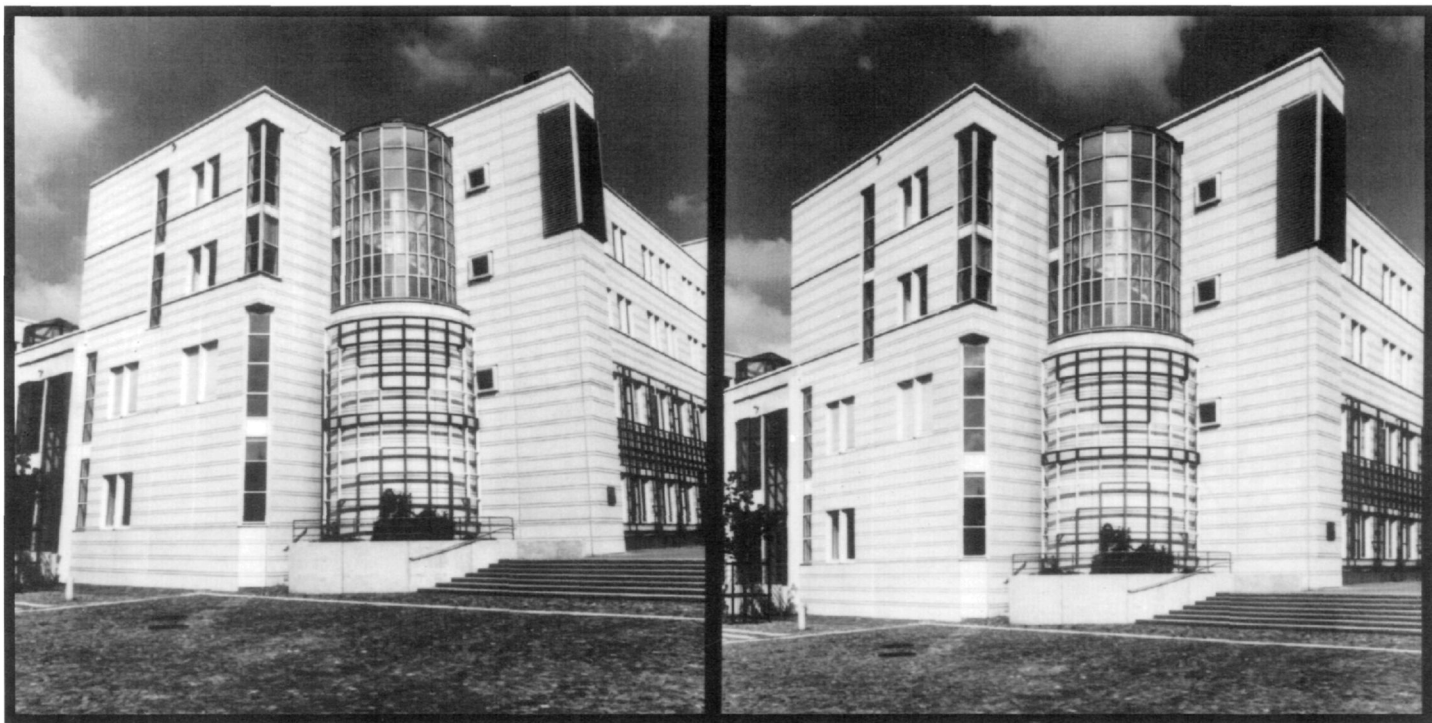
There are a few range-finder-type 35-mm cameras (i.e., *Leica M-6*, *Contax G-1*, *Konica*, etc.) with interchangeable lenses available, but they are expensive. Instead of looking through the lens, as in the SLR, you sight through a range-finder prism on top of the camera. Focusing for the range-finder is very accurate. Some people have trouble using the frames in the viewfinder to compose their pictures because of the frame outlines seen through the viewfinder. These outlines represent the area of actual view. They are called bright frames. Each one represents a different focal length in the viewfinder. Range-finders also suffer from parallax problems. Parallax is the difference seen between the viewfinder and the lens. At infinity, there is no significant problem. The closer you get to



Rangefinder Camera. (Frederic Athearn, 1995)

the subject, the more parallax occurs. The photographer may see the complete image in the viewfinder, but because of parallax, the lens fails to capture the entire subject. (See **Glossary**.)

A normal lens for a 35-mm camera is 50mm in focal length. It is called normal because the angle of view is approximately the same as the human eye. A 50-mm lens is usually the lens sold with the camera. It is perfectly usable for documentation. However, a wide-angle (24-mm to 35-mm) lens gives the photographer a wider view of the scene, taking in more of a building, for instance. Wide-angle lenses may induce distortion. The greater the angle, the greater the distortion. Lines tend to curve and parallels converge. A cheaper lens



The photo on the left was taken using a Zeiss Distagon 60mm lens. The one on the right was taken with a Zeiss Distagon 40mm lens plus Zeiss PC-Mutar 1.4x Shift Converter for Hasselblad. Without the PC lens the building appears to be leaning backward. (Photos courtesy of Hasselblad, 1990)

has more distortion than an expensive, highly corrected lens. The wide-angle lens is useful for photos in tight places, for interiors, or for photographs where the whole image cannot be composed on film without a wider view.

On the other hand, moderate-to-long (100-mm to 400-mm) telephoto lenses are sometimes useful for documentation. When it is possible to get back far enough from a building to use a telephoto lens, the perspective created by that distance is very pleasing. Distortion of the property is minimal. Lines are straight and parallels do not converge. Telephoto lenses are also useful for photographing a site from a distance that is not accessible for closeup documentation. However, atmospheric haze and heat effects may interfere with the clarity of images taken with a telephoto lens. Use a telephoto lens with caution. Generally, image quality is not as good as could be obtained close up, but telephoto lenses are really useful for occasions when one cannot get up close to a feature or detail. The longer the lens, the greater the need for a tripod.

Zoom lenses are another type of lens that can be useful in photographing historic buildings and landscapes. Zooms are very common for 35-mm

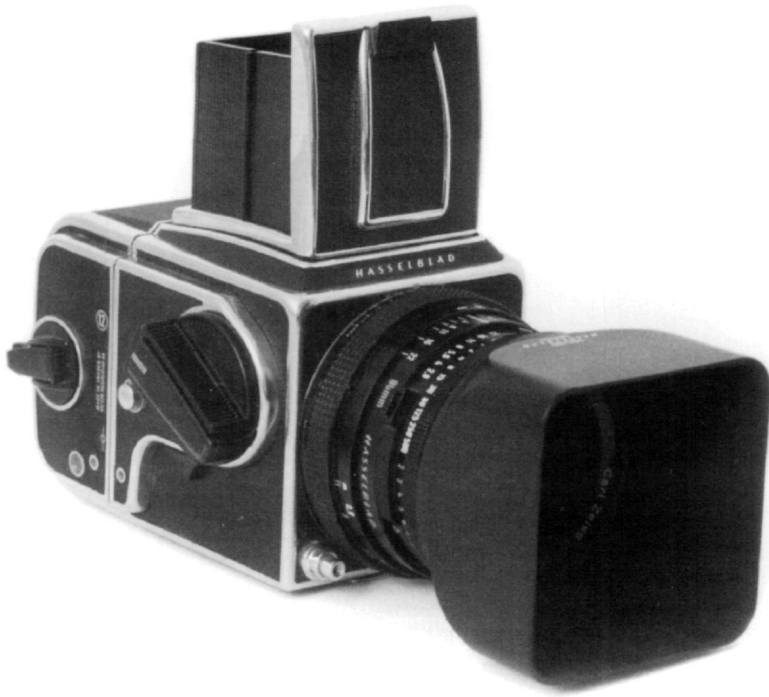
cameras. They range in focal length from 20-60mm to 200-500mm. The most common is probably 35-70mm and 70-200mm. Zooms are very versatile, providing the photographer with a range of focal lengths from which to choose. The primary virtues of a zoom lens are convenience and choice. Cheaper zoom lenses fail to produce images of sufficient sharpness for National Register standards.

Perspective correction (PC) or shift lenses are made for both 35-mm and medium-format cameras. They can be used in architectural documentation to eliminate convergence. These lenses usually are moderately wide-angled (24mm) and shift side-to-side and up and down. Some perspective correction lenses also tilt, like a view camera. (See camera descriptions.) The advantage of this type of lens for the photographer of architecture is that it can be moved to correct perspective, convergence, or distortion. In the case of converging parallel lines, for instance, the lens can be moved off its axis to correct the lines. PC or shift lenses are mandatory equipment for quality small-format architectural photography. Currently, both *Nikon* and *Olympus* provide the flexibility of offering both 35mm shift lenses as well as other wider-angle shift lenses. Several other manufac-

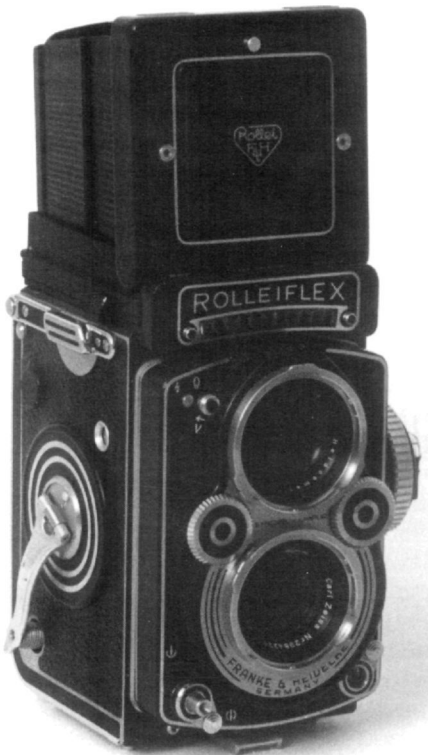
turers produce shift lenses for their SLRs in a single focal length, most often 35mm. Perspective correction lenses or cameras should be used with a tripod and level or the benefits they offer are negated.

Most 35-mm films end up at a drug store or a photo shop to be developed, where machine prints are standard. Black and white prints are required for nominations. While it is somewhat more expensive (about 25 percent on the average) and usually more time-consuming to have stable, permanent 35-mm negatives and prints made, it is worth some extra expense, because the goal is long-term storage and retrieval of these materials. Black and white photographs produced by machine processing are marginally stable (perhaps fifty years). However, they may be submitted with National Register nominations provided they contain no evidence of residual chemicals, fading, or yellowing.

The 35-mm camera is easy and quick to use, but a 35-mm negative does not provide the level of detail and quality that a negative from a larger format camera can. Small-format films stretch the limits of resolution (resolution is measured in lines per millimeter) and sharpness. Most 35-mm single lens reflex cameras



6 x 6 cm Single-Lens-Reflex Camera with lens shade. (Frederic Athearn, 1995)



Twin-Lens-Reflex Camera. (Frederic Athearn, 1995)

have very good lenses on them. But when a 35-mm negative is enlarged to 8 x 10 inches or 11 x 14 inches, the image undergoes degradation to the point that important details can be lost.

For photographic documentation where color slides (transparencies) are needed, 35-mm film is helpful. Using *Kodachrome* film (for long life), a 35-mm slide gives the viewer an idea of the tones and shades of a structure and what the environment looks like; however, using slides is NOT an acceptable substitute for archival black and white negatives and prints. (Color slides are required in the formal review of National Historic Landmark nominations.)

MEDIUM-FORMAT CAMERAS AND LENSES

A medium-format camera is superior to a 35-mm camera for recording historic resources that may be eligible for inclusion in the National Register of Historic Places. The medium-format camera captures details and allows for greater enlargement of negatives than the 35-mm camera without significant quality loss. Medium-format refers to cameras that use 120/220-size roll film. Medium-format photography is a compromise between small (35mm)

format and large (a 4- x 5- inch) format negatives. Most working photographers acknowledge the superiority of a medium-format image over a small-format image.

By definition, any camera that uses 120/220-size-roll films is medium format. Standard medium formats are 6 x 6cm (2 1/4- x 2 1/4-inch), 6 x 7cm, 6 x 8cm, and 6 x 4cm. Using a medium-format camera, a photographer can make a detailed record of a historic property without the expense and difficulty of a 4 x 5, or larger, view camera. Medium-format equipment is also more commonly available and easier to use than large-format equipment.

The same comments that apply to 35-mm cameras regarding wide-angle lenses and telephoto lenses apply to medium-format cameras. Their use is seriously limited in architectural photography because normally they cannot be shifted to correct for distortion and perspective. Most current manufacturers make lenses for medium-format cameras that can be shifted called perspective correction or "pc" lenses. Perspective correction lenses are necessary for photographers using a medium-format camera to photograph architecture. They are expensive and they do not provide as much shift movement as a large-format view camera, nor do they offer as much shift movement or as wide an angle-of-view in their formats as do 28-mm or 24-mm shift lenses in the 35-mm format. Some currently available medium-format cameras that have interchangeable lenses (and in some cases, removable film backs) include: *Hasselblad*, *Bronica*, *Mamiya*, *Pentax*, *Rollei*, and *Fujica*.

Older, medium-format cameras like the Twin-Lens-Reflex are sometimes found in the closets of small museums and historical societies. Twin-Lens-Reflex (TLR) cameras were once the standard cameras for 2 1/4- x 2 1/4-inch negatives. Now Single-Lens-Reflex (SLR) cameras have replaced them. While TLRs do not have removable film backs, or interchangeable lenses, they are perfectly usable for photographing architecture. (Today, there are only two TLRs on the market, the *Rolleiflex* and the *Mamiya Twin Lens*. The *Mamiya Twin Lens* offers interchangeable lens capability, while the *Rolleiflex* does not. (Both of these cameras are 6- x 6-cm format.)

LARGE-FORMAT CAMERAS

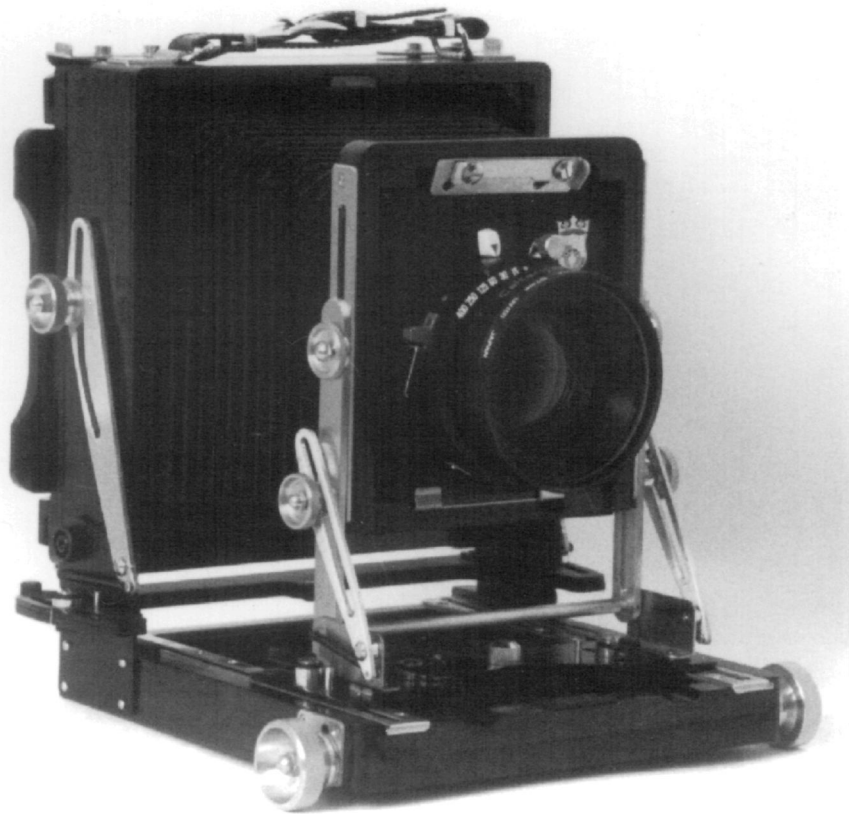
Large-format cameras commonly have film formats of 4- x 5-inches; less common is 5- x 7-inch. Many commercial studios and art photographers use 8- x 10-inch film. The primary virtue of the large-format camera is that it is fully adjustable. It will swing, tilt, shift, and move in almost any direction. It is the best camera for architectural photography, resulting in fully corrected photographs.

The three most common types of large-format cameras are the view camera, the field camera, and the technical, or press camera. A view camera is basically a unit with a front standard and a rear standard, with light-tight bellows in between, mounted on a rail or board. It can weigh as much as 20 lbs. The lens is on the front and the film holder is on the rear. The subject is viewed from the rear of the camera on a ground glass back. The viewed image is reversed and upside down. A heavy duty tripod is essential to hold a view camera steady.

Film for a large-format camera comes in cut-to-size sheets, not rolls. The film sheets go into light-proof film holders that are inserted at the back of the camera. The dark slide is removed, the film exposed, and the slide is replaced. (All film loading and unloading from the film holder(s) must be done in total darkness.)

The field camera differs from the view camera. It is basically a box with a drop bed to which the front standard and bellows are lowered. This camera is very compact, lightweight, and portable compared to the view camera. A wooden 4 x 5 field camera can weigh less than 3 lbs. A lighter tripod can be used with a field camera, reducing field weight. A field camera may have fewer moves than a view camera, but for most architectural purposes, it is perfectly adequate. Viewing and film exposure occur exactly in the same way as a view camera. Field cameras are popular with photographers who must hike into remote areas to take photographs.

A technical camera (or a press camera) is very similar to a field camera, except that it is heavier and may have features like a rangefinder. It also has more limited moves, in



4- x 5-inch Wood Field Camera. (Frederic Athearn, 1995)

particular, shift and tilt abilities. There are many old press cameras available, the *Speed Graphic* for one, that are usable for producing 4 x 5 photographs.

The primary advantage of using a view or field camera is that architectural perspective corrections are easy to make. Also, the large-film-format gives sharper, more detailed images. A 4- x 5-inch negative, for example, needs only twice the enlargement to produce an 8- x 10-inch print. A 35-mm negative, on the other hand, needs eight times greater enlargement to produce an 8- x 10-inch print. A good 8- x 10-inch negative can be greatly enlarged without losing quality. An 8-x 10-inch contact print can be absolutely exquisite. It has a quality like no other photographic print.

DIGITAL CAMERAS

A new and promising development in the field of photography is the digital camera. This camera is being used increasingly to record historic structures for publication. Since the 1980s, digital photography has developed as a means to store, view, and manipulate images without film. Images are stored in the camera's memory or on disk; the images are then downloaded for viewing on a computer. Digital images can easily be posted to the Internet or distributed via electronic mail.

BASIC TIPS ON LENSES AND FILTERS

TRIPODS AND HAND-HOLDING THE CAMERA.

The use of a good tripod will eliminate camera movement—resulting in a sharper image. This is particularly true if you are using a 35-mm camera. If you must shoot without a tripod, shoot at the highest possible speed to reduce camera shake. When you use a telephoto lens longer than 135mm, you should have the camera on a tripod. The longer the lens, the greater the shake. A general rule is, if you must handhold a long lens, your camera speed should be at least two times the length of the lens. For example, a 200-mm lens should be shot at 400th of a second.

FILTERS AND HOODS.

High quality filters can improve photographs of architecture by enhancing details and bringing out surfaces that might otherwise go unnoticed. One of the most useful filters is a medium yellow, which increases contrast and helps to define the texture of wood, brick, and other surfaces. Orange and deep-yellow filters increase the effect even more. Green filters enhance foliage and plants, while a red filter can provide dramatic contrasts between dark and light areas. Photographs shot with a red filter can also provide more details when shooting masonry and poured concrete. A filter mounted over a lens will always degrade image quality somewhat, so use quality filters to reduce light and contrast loss.

Another useful filter for the photographer is the polarizing filter, for reducing or eliminating reflection. This is particularly helpful if the photograph includes bodies of water or large areas of glass. Using a polarizer makes it possible to shoot through glass or into a situation where there is considerable glare. Polarizers can also increase contrast and/or darken blue skies in black and white photography.

All lenses with filters require exposure compensation, because they transmit less light than an unfiltered lens. A camera with a built-in light meter can calculate the correct speed and aperture. Because of light loss,



Lens Hoods (Shades). L. rubber, clip-on type. R. metal, screw-on type. (Frederic Athearn, 1995)

working speeds and/or apertures will be lower than they would be without a filter. When using hand-held meters and cameras without light meters, the photographer must calculate the filter factor to assure properly exposed images. For example, if a medium-yellow filter has a filter factor of 2X, the f/stop must be increased by two stops or decreased by 2X. That would mean without a filter, you might be shooting at f/8 at 1/125th second. The f/stop is reduced to f/4 or reduced to 1/130th of a second to compensate for light loss from the filter. Again, if the camera has a through-the-lens metering system, compensation occurs automatically.

A simple, cheap and effective way to increase photographic quality is to use a lens shade (hood) for all shots. A lens hood should always be used on all lenses and cameras because it reduces flare and distortion and results in sharper, crisper photographs. Hoods also protect the front element of a lens from damage or

from water when working in adverse conditions.

It is critically important to keep lenses clean, because dirt and fingerprints decrease contrast and sharpness. Dust should be blown off a lens, not rubbed off. If gentle blowing does not work, wipe the lens carefully with a special cleaning tissue available at most camera stores. Use cleaning fluid formulated for photographic lenses only. Use it sparingly to avoid loosening the lens elements or damaging the delicate multi-coatings. Dampen the tissue with the lens cleaning fluid. Apply with a circular motion. Finish with dry lens tissue. Do not ever rub a lens surface with an ordinary cloth; it will put tiny scratches in the lens coating. Camera manufacturers do not recommend using canned, pressurized air to blow off dust because the air pressure can damage lens surfaces, mirrors, and focusing screens. The best protection is to keep a UV or skylight filter screwed onto the lens more or less permanently.

III. DOCUMENTING HISTORIC PLACES ON FILM

NATIONAL REGISTER GUIDELINES FOR PHOTOGRAPHIC COVERAGE

The number of photographic views depends on the size and complexity of the property. Submit as many photographs as needed to depict the current condition and significant aspects of the property. Include representative views of both contributing and noncontributing resources. Prints of historic photographs may supplement the documentation.

BUILDINGS, STRUCTURES, AND OBJECTS

- Submit one or more views to show the principal facades and the environment or setting in which the property is located.
- Additions, alterations, intrusions, and dependencies should appear in the photographs.
- Include views of interiors, outbuildings, landscaping, or unusual details if the significance of the property is entirely or in part based on them.

HISTORIC AND ARCHEOLOGICAL SITES

- Submit one or more photographs to depict the condition of the site and any aboveground or surface features and disturbances.
- If they are relevant to the evaluation of significance, include drawings or photographs that illustrate artifacts that have been removed from the site.
- At least one photograph should show the physical environment and configuration of the land making up the site.



The St. Augustine Church, built in 1844 in New Diggings, Wisconsin, was photographed with a medium-format camera, a PC lens, and a yellow filter. (Jeff Dean, 1981)

ARCHITECTURAL AND HISTORIC DISTRICTS

- Submit photographs representing major buildings and styles, representative noncontributing resources and any important topographical features defining the character of the district.
- Streetscapes, landscapes, aerial, or oblique views are recommended.
- Views of individual buildings are not necessary, if streetscapes and other views clearly illustrate the significant historical and architectural qualities of the district.
- Key all photographs to the sketch map for the district.

ARCHEOLOGICAL DISTRICTS

- Submit photographs of the principal sites and site types within the district following the guidelines for archeological sites.

Historic buildings can be saved on film. Many of them typify a particular time, type, or style. Urban streetscapes, rural landscapes, battlefields, archeological sites, and other historic resources are also worthy of photographic documentation. The following paragraphs discuss a variety of historic properties and photographic situations and suggest ways to photograph them for the National Register.

Obviously, the more complex a historic property, the more photographs will be needed. Some simple resources can be documented with one or two photographs. However, trying to save film by shooting the minimum number of views to document a site is false economy. Film is inexpensive relative to time, personnel, and equipment. It is far more expensive to go back to a site to shoot more photos than it is to have more than you need when you leave.

It makes good sense to shoot at least two, preferably three, different exposures of each view, if you are using a manually adjusted camera. This insures that at least one exposure will be printable. Based on a meter reading, one initial shot can be made. Then take exposures on either side of that reading. That will give you a bracket of exposures—one f/stop overexposed and one f/stop underexposed. For example, if the light meter calls for f/11 at 1/125th of a second, a bracket would be f/8 at 1/125th of a second and f/16 at 1/125th of a second.

Use common sense to make good photographs. The photographer's goal should be how to best portray a district, site, building, or object. In order to get the best possible image, extraneous subject matter should be kept to a minimum. Avoid shooting overhead power lines, telephone poles, and other distracting elements. Cars and trucks in the foreground should be removed. If that is not practical, consider shooting in early morning, late afternoon, or on Sunday morning when traffic is lighter. The same goes for pedestrian traffic. If there are many people in the foreground, wait until they are gone. Sometimes it may be helpful (and only if you have permission from the owner) to trim shrubs and weeds before shooting. The fewer extraneous elements in the picture, the better.

Walking around a site to assess the situation and lighting before shooting is of great value. By planning your shots, you can avoid wasting film, or worse yet having to go back and retake the shots. The best lighting, good angles of view, and other factors that will greatly affect the quality of your photographs should be determined before the pictures are taken.

Some potentially difficult situations for the photographer are:

Backlighting. This occurs when the main light source is behind the primary subject. The subject is silhouetted and the details in the foreground of the photograph are wiped out. To overcome backlighting, if you are using a manually adjusted camera, set your camera to meter for the dark foreground area, not the bright backlit location. (If using an automatic camera, press the backlight button.) By compensating, either manually or automatically, for the overly bright area, the subject will be more or less properly lighted in the final print. Backlighting can best be avoided by keeping your back to the sun, but sometimes this is not possible. However, it is vitally important to prevent the sun from shining into the camera lens. Use a lens hood, or have a friend shield the lens from the sun. You may have to reposition yourself slightly.

Sunny days vs. Cloudy days. The photographer should shoot on bright days to get the maximum amount of available light and, if shooting color, brighter colors. However, if color intensity is not an issue, an overcast day provides more even lighting and reduces the problem of shadows. There is also a difference in the quality of light. Northern light is usually softer. Southern exposure is harsher and brighter, making some difference in exposure times and how a photo is shot. Early morning or late evening light is also unique. Color values change, becoming much redder, and the amount of available light is decreased. Thus, if photographers choose to shoot at these times of day, a longer exposure will be needed to adequately light the subject.

Sharpness and Depth of Field. Lenses are generally sharper at small apertures (f stops) than at large. Thus, f/11 will be sharper than say, f/4, under normal circumstances. Also, as the aperture is decreased, the distance that will be in focus increases. (See **Glossary** for f stops.) This phenomenon is called **depth of field** or hyperfocal distance. The rule is truer with short focal lengths (a wide angle) than with longer lenses. A telephoto lens has very little depth of field. Depth of field is important, because when a 50mm lens is stopped down to, say f/11, it will focus from four feet to infinity. Whereas, if it is opened up to f/2, it may only focus

from three to six feet. Everything out of that focal range will be out-of-focus. When a small aperture (f/8 or smaller) is used, not only is the image sharper, but focusing becomes less critical. If f/11 is used, the camera does not need to be focussed, unless it is closer than the nearest limit of the lens.

HISTORIC BUILDINGS, STRUCTURES, SITES, AND OBJECTS.

Photographing buildings, structures, sites, and objects for the National Register is not particularly difficult if you understand that the main goal is to adequately **document and record** the resource. Very simple buildings require fewer photographs than larger, more complicated ones. On the other hand, even fairly basic properties, or archeological sites, might need more information, based on National Register requirements. Non-contributing features or intrusions should be photographed for all categories of historic properties. The photographer must decide (if possible, after consulting with architects, engineers, or historians who are working on the project) how many shots are needed to document a property for the National Register.

For buildings, structures, sites, and objects not only is the primary feature photographed, but also all secondary features. The relationship of buildings, structures, sites, and objects to features is as important as the architectural information. Also, the environmental setting as it relates to the historic property should be adequately represented. The following photographs should be created for most historic properties, larger than a single, simple building:

- All sides of the primary building, structure, site, or object (this would be the ideal level of documentation) **OR**,
- Perspective views of each corner of the primary building, structure, site, or object;
- Detailed views of, for instance, windows, doors, unusual features, construction style, or other notable elements;
- Views that show materials used in construction of the building, structure, site or object;



This Victorian house in Independence, Jackson County, Missouri, was the home of Harry S. Truman, 33rd President of the United States, from 1919 to 1972. On the death of Bess Truman in 1982, the house became the Harry S. Truman National Historic Site. (Historic American Buildings Survey. Jack E. Boucher, 1983)

ing details. (See III, **Backlighting**, on how to deal with this problem.) Backlighting may be avoided by photographing interiors on overcast days, or at night. (It is better to avoid taking interior photographs at night, if you can because of the undesirable appearance of "black" windows) Natural daylight is most desirable. Time exposures taken in the daytime with small-lens-aperture settings can produce pleasing, natural-looking interiors. Try to use a tripod. If artificial lights are necessary, use photoflood lights (such as quartz halogen), which are set up on stands and plugged into an AC outlet.

Electronic flash can also be used to light interiors. A single flash unit will not normally cover a larger interior. Many photographers tilt the flash toward the ceiling to bounce the illumination; the result is softer lighting through elimination of harsh shadows. Several flashes connected with secondary electronic flash units that have built-in or attached electric eyes can also be used to effectively light a large area.

Interiors are normally cramped. Unless large public buildings are

- An overall view of the principal building, structure, site, or object showing how it relates to the landscape;
- At least two, perspective views of each outbuilding or smaller feature on the property; thus assuring that all contributing and non-contributing resources will be documented;
- Appropriate views that show how outbuildings or features relate to each other and to the landscape; and
- Views of unique or special details of outbuildings, foundations, or features that may not be obvious in general photographs.

INTERIORS

While interior shots are not necessary for all National Register nominations, they must be included if the significance of the property is entirely or partly based on them. Interior views can add valuable information to the nomination by helping the reader visualize descriptions of floor plans, details, decoration, and so forth. Special problems arise when photographing interiors. Backlighting, caused by sunlight penetrating windows, will wash out the surround-



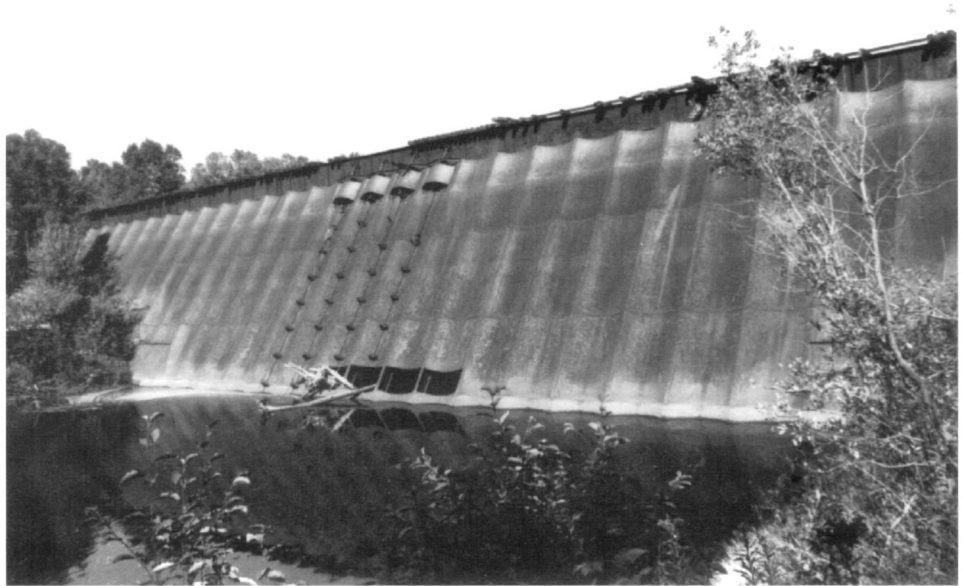
Now a museum, Whitehall, the Henry Morrison Flagler House, Palm Beach County, Palm Beach, Florida, is a magnificent mansion built by Flagler for his wife Mary Lily Kenan in 1901. This interior view shows the Marble Hall and Grand Staircase, designed by Carrere and Hastings. (Historic American Buildings Survey. Jack E. Boucher, 1969)

being chronicled, photographing interiors usually requires a wide angle lens, even then results may not be entirely satisfactory. Generally, the wider the angle of view, the more distortion. When doing interiors, a photographer must strike a balance between how much will be seen versus how much distortion is acceptable. A perspective correction, or PC, lens can reduce distortion in interior shots, as will care in selecting camera positions.

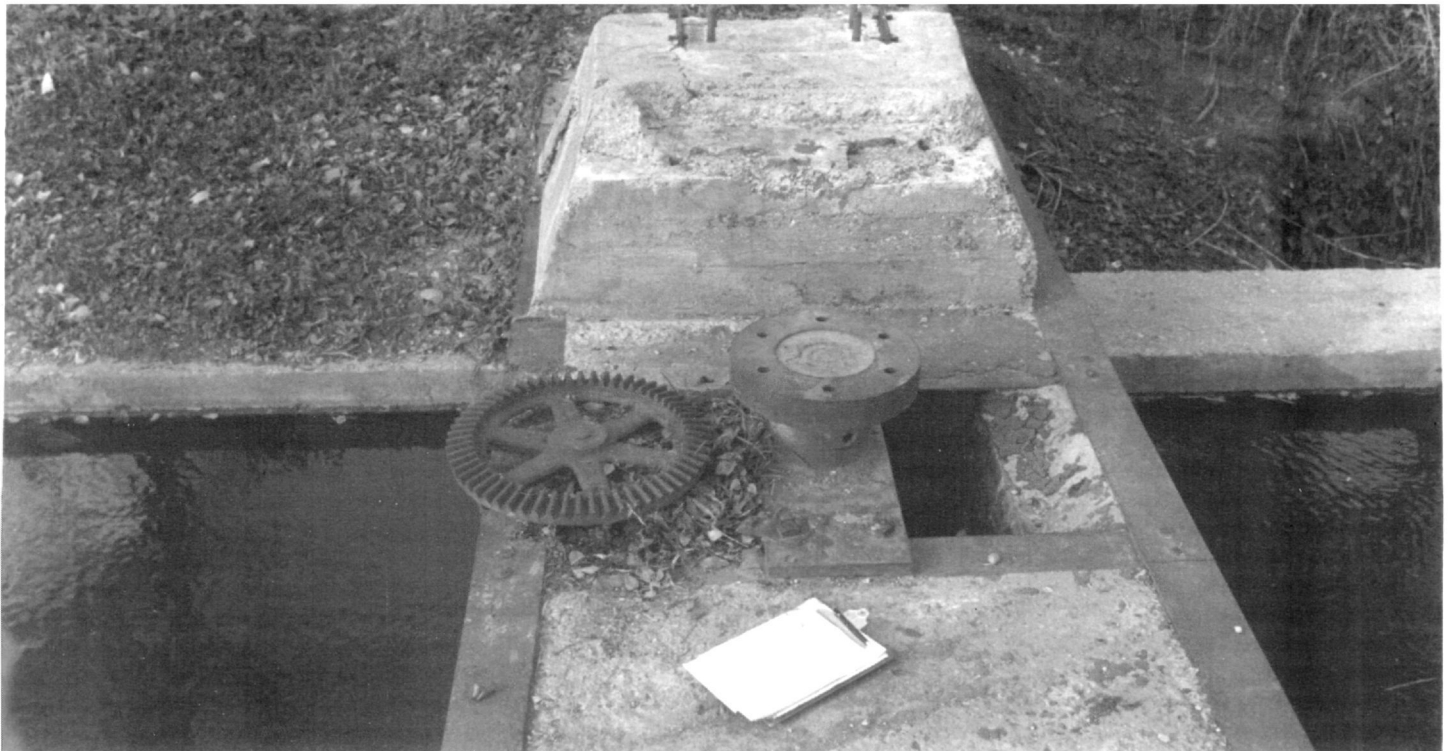
HISTORIC ENGINEERING PROPERTIES

Historic engineering properties include everything from dams to mining stamp mills and industrial processes. Photographing these resources can be difficult, because the goal is to impart not only what the features look like, but also what their purpose is, or was. There are no set rules for industrial or engineering properties, because no two resources are exactly alike, but several basic features should be recorded, including:

- An overall view of the resource showing the relationship between various components;
- The significant features of the resource that are discussed in the written documentation of the property;
- The architectural or structural aspects of the property;
- The technical aspects of the property. (For instance, in a mining



The Redridge Steel Dam, built in 1900, is one of two dams on the Salmon Trout River, near the village of Redridge, Houghton County, Michigan. A few hundred feet upstream stands an earlier stone-filled, log, crib dam built in 1894. The steel dam replaced the log one, which was submerged within its reservoir from 1901 until the reservoir was drained in 1960. (Terry S. Reynolds, 1989)



View facing north of the machinery foundation above the wheel pit at South end of ditch at the Thompson—Cape Dam and Ditch Engineering Structure, San Marcos, Hayes County, Texas. Note clipboard placed near spindle head and gear to show scale. (Texas Historical Commission. Margaret Howard, 1984)

stamp mill, the various components such as the stamps, ovens, tables, vats, etc. should be photographed.);

- Details of design of construction, including structural systems, and special features of the building or property, both interior and exterior;
- Machinery, tools, specific processes, and other intricate parts of the building's technology;
- If copies of historic photos of the property are available, they can be copied on standard film and processed normally. This is particularly true of industrial and engineering resources where the property may have been photographed when new, but has been substantially changed, or destroyed, over the years.

BRIDGES, TRESTLES, AND AQUEDUCTS

Bridges, trestles, and aqueducts are parts of transportation systems for moving goods and people. Bridges and trestles are parts of rail or road systems. Certain basic views to cover are:

- An overall view of the span(s) from both sides. If the bridge is very long, an ultra wide angle lens is most valuable in giving adequate coverage. A good vantage point may be either end of the bridge where the entire span can be seen. Depending on the density of the foliage and the season, a nearby hill looking down on the site may also be a good vantage point.
- Adequately lighted views of the structural systems of a bridge or trestle, including truss types, connections between components, pilings, and abutments and other features;
- Detailed shots of specific features such as builder's plates, rivets, bolts, flanges, and other materials;
- Materials used in various parts of the structure; and
- Approaches to the structure.

RAILROADS

A railroad is a linear feature with engineering components along the right-of-way. There may be numerous buildings and structures associ-



Cabin John Aqueduct, Montgomery County, Maryland. This stone arch was built in 1869 and was the world's longest until 1903. It was designed by Montgomery Meigs, U.S. Army Corps of Engineers. The aqueduct provided the principal source of water to Washington, D.C. throughout the late 19th century. (Michael Bourne, 1969)



View showing the east facade of the Stoneman Bridge, Yosemite National Park, Mariposa County, California, designed and built by the National Park Service in 1933. The bridge is reinforced concrete faced with rough boulders of native granite to give it a rustic appearance. The photograph shows the exterior material very clearly and also shows significant features—the equestrian tunnels—and how they are built out from the face of the wing walls for decorative emphasis. (National Park Service. Dean Shenk, 1976)

ated with it, such as: stations, round-houses, yards, water towers, section houses, freight houses, bridges, and other resources. Railroad equipment including: passenger cars, freight cars, locomotives, and specialized equipment like snow plows, flanges, or cranes may need to be photographed. Most likely you will need written permission to be on the property.

Depending on the scope, the following features should be documented:

- Linear features such as a railroad line (either operational or abandoned) should include a view down the roadbed. A perspective correcting lens or camera will assist in this task. Additionally, engineering features such as cuts, fills, tunnels, crossings of drainage, and stone culverts should be documented.
- Architectural resources, both contributing and non-contributing, such as: stations, outbuildings, water towers, freight houses, section houses, signal towers, guard houses, sheds, locomotive sheds, roundhouses, and turntables should be recorded using the guidelines in *How to Complete the National Register Registration Form*. Views showing relationships between buildings are important, as are shots of objects and structures that may be on the property. If a railyard is the subject, the relationship between architectural features and the layout of the yard should be shown.
- Bridges and trestles are recorded as described in the section on bridges. (See above.)
- Tunnels can be photographed using flash equipment to light the interior. The information within a tunnel is the construction detail, for example, the cast iron lining of a subaqueous tunnel. Ventilation mechanisms are worthy of photographic coverage. Often the portals are nothing but rock into which the tunnel was blasted; in other cases, they are elaborate edifices. They should be photographed.

A word of caution: many structures, sites, and complexes are extraordinarily dangerous environments. Eternal vigilance is the price of your safety—even life. Trains, sometimes traveling at 125mph will



View from the Northeast of the Howard Bridge in Colorado, showing the structure and approaches to the bridge. (Clayton B. Fraser, 1983)



The Baltimore and Ohio Viaduct over the Black River, near Lodi, Medina County, Ohio, is a monumental masonry civil engineering structure. The photograph shows the timeless simplicity of the stone arched viaduct built in 1892 on the main line of the Baltimore and Ohio, linking Chicago with the East. (Eric Johannesen, 1975)

literally be upon you before you can move to safety. Apparently safe roofs and floors can collapse under your weight. Hard hats are almost always

required in industrial settings. In any risky situation, however slight the risk, have a companion.

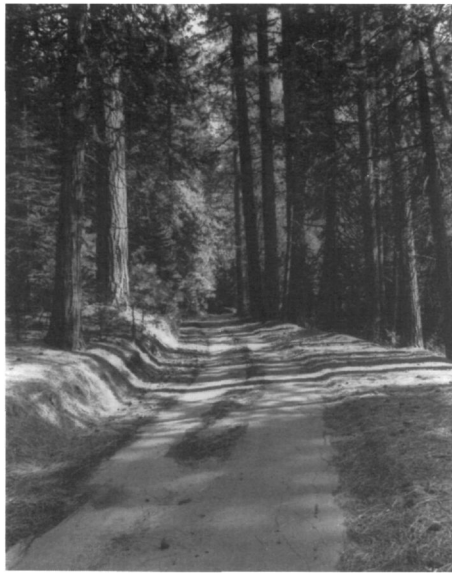
ROADS AND TRAILS

Similar to railroads, trails and roads are linear features that may or may not have buildings associated with them. They may have engineering qualities that make them special, and certain shots should be taken to assure coverage of the site. In general, the following should be documented:

- A view of the length (or portion of the length) of the road or trail. Details of special features need to be photographed. For example, if the road is made of an unusual asphalt, it should be recorded.
- Selective views of cuts, fills, culverts, bridges, trestles, and other engineering features. These are similar to railway features and can be treated in the same way.
- Detailed views of roads and trails documenting special or unusual parts of the site, such as ruts, wagon tire marks (in rock most likely), pavements (asphalt, brick, macadam, etc.), and other small features such as mile posts, signs, markers, and other road-related items.
- Associated buildings or structures along a road or trail should be photographed using the guidelines for buildings. (See above.) If the features are in ruins, they should be photographed according to the suggestions for archeological properties.

HISTORIC DISTRICTS

Since historic districts encompass larger geographic areas than a single building or site, only essential features should be photographed, including: major buildings, streetscapes, landscape features, overviews and special features such as monuments or parks that are found within the district. It is not necessary to record each and every feature in a historic district for a National Register nomination, but the essence of the district should be captured. Important features need to be portrayed, as do scenes that suggest the character of the entire district. For individual buildings, the guidelines in **Historic Buildings, Structures, Sites, and Objects** (See page 11) may be useful, while for landscapes and streetscapes, see **Landscapes, Streetscapes, and Battlefields** (On this page).

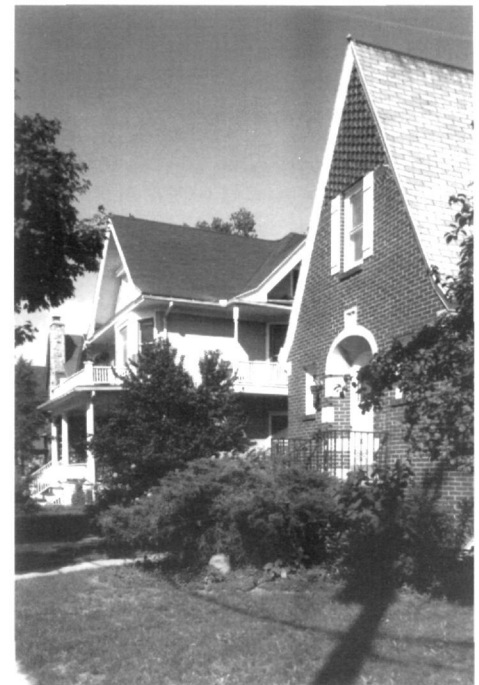
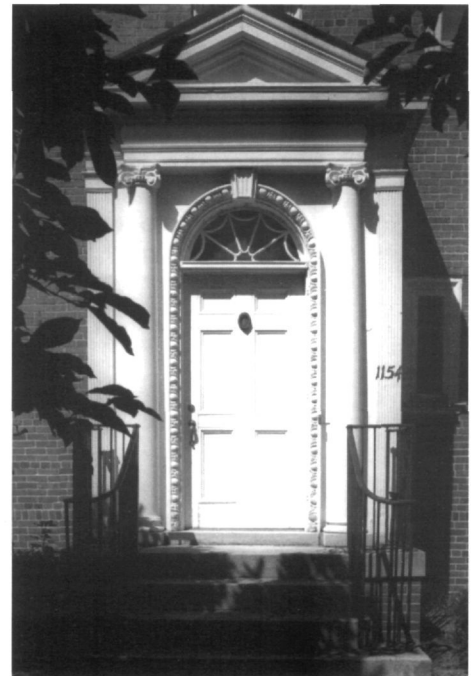


The Great Sierra Wagon Road, constructed in 1882 by Chinese workers for the Great Sierra Silver Mining Company, remains relatively unchanged from its earliest days. (Leslie S. Hart, 1976)

LANDSCAPES, STREETS CAPES, AND BATTLEFIELDS

Photographing landscapes and streetscapes involves recording all of the above features. For further information about features in rural landscapes, see National Register bulletins *Guidelines for Evaluating and Documenting Rural Historic Landscapes*, p. 29. A streetscape can be urban and contain buildings, roads, and other manmade features in a city or town setting. Battlefields are also part of the landscape that should be recorded as historic places. For more information about battlefields see *Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields*, p. 17. For these properties, where photographs are intended to record a wider view, the following recommendations should be kept in mind:

- A wide-angle lens is usually the best choice for landscapes and streetscapes because it provides an angle of view that takes in the overall scene, including the environmental setting. A landscape photograph in this case is a generalized view of the scenery. It is not a photograph of a specific feature.
- There may also be details that need to be recorded. In the case of a planned landscape (such as a city park), various features should be recorded, including benches, statues, flower beds, paths, trails, gazebos, etc. They should also be shown within the context of the overall landscape.



Sherman Avenue Historic District. Detail of Doorway and Houses. (Kathryn Rankin, 1987)



Three views of Chicago's Lincoln Park. (Joanne Nathan, 1990)

- Areas of landscapes involving historic events, or historic places may be recorded in a similar manner. Representative features such as mine waste piles, slag heaps from industrial sites, clear-cuts in forests, vegetation manipulations, and surface disturbances that alter the original natural landscape should be recorded. This is particularly true in the case of historic districts. However, it is not suggested that documentation of each and every feature is required. Representations of contributing and noncontributing features, structures, monuments, and other parts of the overall area should be considered.
- Battlefields should be documented to show the lay of the land, as well as representations of contributing and noncontributing features, structures, monuments, and other parts of the overall area including the environmental setting.

ARCHEOLOGICAL PROPERTIES

Archeological sites are different from other historic properties because they often contain no standing structures, although prehistoric as well as historical archeological sites may include aboveground features such as ruins or earthen structures.

Historical archeological sites may also include such features as dumps, trash pits, outhouse pits, cellars, and foundations. Photographing archeological sites may involve close-ups made in excavation units, requiring flash equipment. Sometimes large areas of a complicated site complex are best shown with aerial photographs that can be taken from a high point of land or an airplane. The

photographer needs to work closely with the archeologist to determine the correct number and type of shots. In general, thorough photographic documentation for an archeological site would include:

- An overall view of the site;
- Views of the environmental setting, such as vegetation, soils, geography, and other important features;



Lowry Ruins. National Historic Landmark. Archeological site in Montezuma County, Colorado. (Frederic Athearn, 1995)

- Views of excavations, if appropriate, to show the extent of the work being undertaken;
- Detailed views, if appropriate, of stratification, artifacts, etc. photographed in context to show how the materials lie in the soil;
- View showing significant disturbances;
- View showing the overall integrity of the site/district;
- View showing the condition of the site and any aboveground or surface features;
- Views of contributing and noncontributing features, as appropriate.

Scaling elements, to establish a reference, should be included in most archeological views.

For some research purposes, archeologists depend on color reproduction because black and white photographs do not adequately indicate soil colors, stains, vegetation types, and other scientific information. If color film is wanted, stable films such as *Kodachrome* should be used and the results printed on Ilford's *Ilfochrome* paper. Color photographs are not required as part of National Register documentation.

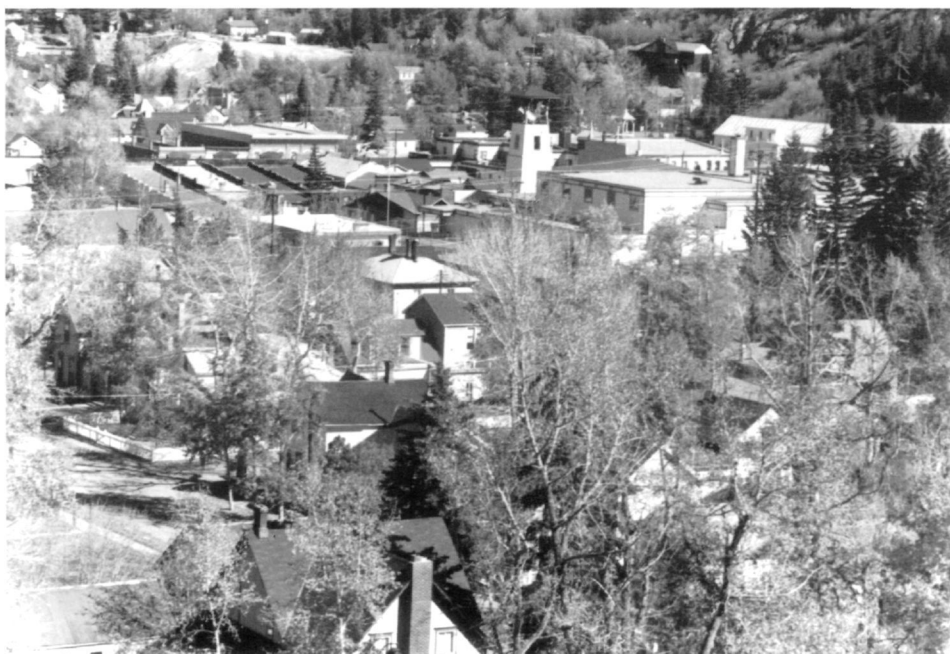
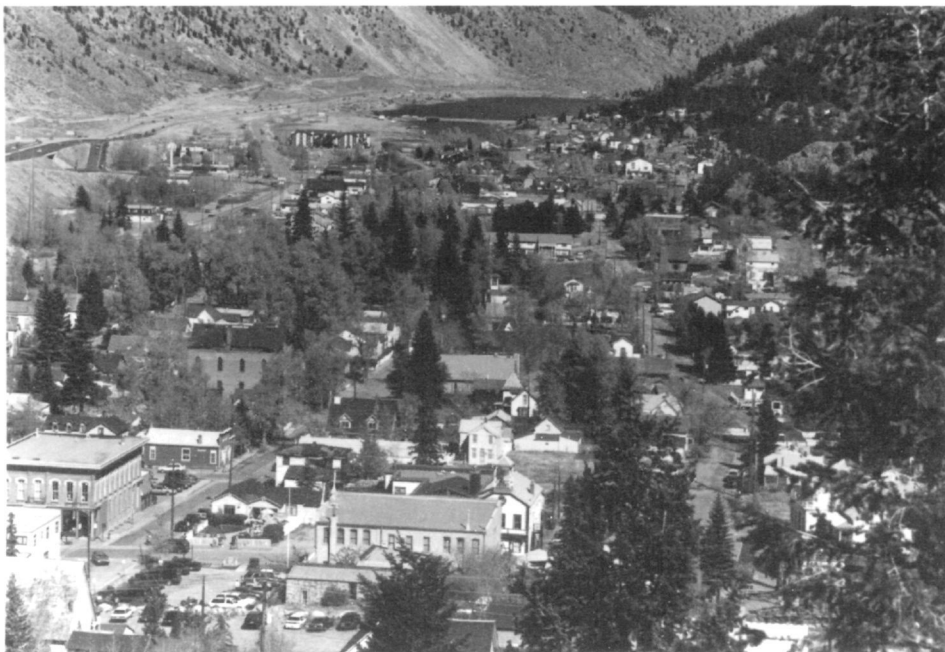
AERIAL AND OBLIQUE PHOTOGRAPHY

Aerial or oblique views are useful for documenting large areas, linear features, and historic districts. These types of photographs can also be used to document landscapes. The environment of a place is hard to show through a series of on-the-ground photos of discrete sites. There are several ways to shoot aerials, without an airplane. Where the resource is surrounded by hills, the photographer may be able to climb the nearest hill to get an oblique view of the area. (When you study historic photographs, you can tell that there are many views shot from hillsides or tall buildings, looking down on a historic property, district, or site.) You can hire a fire department cherry picker for overhead shots. Also, the property or site may already have been photographed from the air, by either the military, the U.S. Geological Survey, a state highway department, or a city planning office. These sources often have prints that can be copied for submission with a nomination.

Do not use a wide-angle lens. The site image will be so small that it may be useless. A moderate telephoto lens such as a 100-mm or even a 135-mm on a 35-mm camera works well to pick up details. If you need more of an overall view, shoot from a higher altitude, if possible. Even a 50-mm lens works fine for aerial photographs, as long as the airplane is low enough to allow for details. One of the more useful camera accessories for aerial work with a 35-mm camera is a motor drive. A motor drive permits

the photographer to track the scene as the aircraft moves. With automatic film advance, the photographer never has to take an eye away from the camera. The result is a smoother series of photos.

As in the case of surface photos, filters are indispensable. When shooting black-and-white film, a yellow or orange filter helps cut haze and increases contrast. This will result in better-detailed prints. If shooting with color film, use an ultraviolet filter to cut atmospheric haze.



These two oblique views are of Georgetown Silver Plume Historic District, Colorado. (Frederic Athearn, 1995)

ON THE ROAD



by Jeff Dean

**former State Historic Preservation Officer and
Director, Historic Preservation Division,
State Historical Society, Wisconsin**

Jeff Dean, former Wisconsin SHPO, ready to go out on a photo shoot!

Author's note: My longtime friend, Carol Shull, Keeper of the National Register of Historic Places for the National Park Service, asked me to prepare the following material for How to Improve the Quality of Photographs for National Register Nominations, in order to add a flavor of everyday life to photographing buildings.

I enjoy photographing old buildings and structures. It is fun and technically interesting. It gets me out of the office and into the real world of historic buildings and the people who care about them.

Most people gain their information about old buildings and the fabric of their neighborhoods and communities through their eyes. In the 1950s, television came along and quickly became the center of family home entertainment, replacing the radio. The human being is a visual being.

Photographs disseminate information about architecture efficiently and widely. They are the basis of such information in books, magazines, and in university courses in architectural history. I cannot imagine how the nation's historic preservationists, architects, and architectural historians could have been educated and trained without the pervasive 35mm slide and heavily illustrated books.

I believe that architects and historic preservation professionals must put some time and effort into training themselves to take good photographs. This means, among other things, acquiring the right kind of camera and camera equipment. Composition, lighting, clarity, or just taking snazzy pictures are concepts that should not be alien to architects, architectural historians, and historic preservationists who are intensely visual beings with great interest in the esthetics of their environment.

In a 1982 article in the *APT Bulletin, Photographing Historic Buildings*, I wrote:

Never before have so many buildings and structures been photographed so frequently by the (historic preservation) multitudes. There is hardly a city in the United States that hasn't witnessed an architectural surveyor stalking its streets, draped with cameras and clipboards, peering at and photographing buildings and structures. Yet I would estimate also that never before has such a small percentage of photographs been executed really well.

This remains true today. Taking good photographs of architecture with small format equipment is not terribly difficult. It requires only the following: common sense, thinking ahead (a.k.a. planning), visual sensitivity, appropriate technical knowledge, and the right equipment. Common sense and visual sensitivity cannot be taught from scratch. The rest can.

Frederic Athearn covers the purpose of architectural photography in some depth here in this bulletin. I have been asked to describe how I go about doing it when on the job. Below, I write about how I photograph architecture with small-format equipment. I don't cover special activities such as rectified photography or large-format photography.

When I am charged by myself, or by others, to photograph buildings, the first thing I must know is which way the buildings face. This often requires me to consult maps or site plans, keeping my fingers crossed that the primary facade does not face north. If it does, it may well mean waiting until early in the morning or late in the afternoon in late June or early July.

Once I know the direction the buildings face, I can plan my trip. Or can I? Not necessarily. It depends on how far ahead I plan and how open my schedule is. In my neck of the woods, if I am in pursuit of fine exterior photographs, I often cannot plan beyond the coverage of a reliable weather forecast. It can be very frustrating to drive to a site only to find the sky overcast or that clouds have just moved in. If this is indeed the case, I remind myself that overcast days are excellent for interior photography and head inside. (Remember also that some buildings and structures may photograph best in the soft light of an overcast day, for instance a building with dramatically deep overhangs and shadows. (See below.)



Frank Lloyd Wright's Taliesin near Spring Green, Iowa County, Wisconsin, placed on the National Register in 1973. Buildings such as this one with deep overhangs photograph better in shade, or on an overcast day. (Jeff Dean, 1980)



A medium-format camera mounted on a tripod with a 75-mm shift lens. (Jeff Dean, 1980)

When I'm traveling to unfamiliar cities, I study road maps for these communities to locate the subject buildings on them, so I can get in and out with the least wasted motion.

Assuming the buildings, the weather, the distance, and the schedule are all in fortuitous conjunction, I load up. First, that means determining what equipment I need to take with me. As Athearn notes, most National Register photographs are taken with 35-mm equipment. That includes me. So, I usually take two 35-mm SLR camera bodies (one for fine-grained black-and-white film and the other for Kodachrome slides), both equipped with cross-hair-grid viewfinder screens. Occasionally, I also take a 6- x 7-cm SLR with a shift (perspective correcting) lens. Colored filters for black-and-white cameras are a necessity, and UV filters for slide cameras are a wise inclusion, as are a tripod and level.

What if it is hot outside? How do I protect film from heat damage? I never leave film of any sort in a parked car or in motorcycle saddlebags in the sun. Never! I would suggest you bring along a small cooler with a little ice or another coolant inside it in which to keep your film on hot days. If you use ice, remember to wrap your film in a watertight package to protect it. Humidity can also be a problem for film stored in an ice chest. Always try to keep your film as cool and dry as possible when outdoors in the summer.

I always pack a shift or PC (perspective correcting) lens for architectural photography. They are made by several camera manufacturers in 35-mm-format focal lengths, ranging from 24mm to 35mm. Such lenses correct for the visual distortion found in architectural photographs taken with normal, nonshifting lenses. Without the use of a PC lens, buildings in photographs typically appear to be tilted backwards, as though falling over. Though pricey, these lenses are in fact necessary if serious small-format architectural photography is the goal;



The perspective correcting lens shown on this 35-mm camera corrects visual distortion. (Courtesy of Nikon)

if you do not have one, get one. Currently, *Nikon*, *Olympus*, and *Canon* systems have the flexibility of offering multiple PC lenses in more than a single focal length—the standard 35mm—plus a wider lens. Several other manufacturers produce PC lenses for their SLRs, but just in one focal length.

PC lenses are manual lenses. The view you see through the viewfinder will darken as you decrease the aperture opening. You need to know how your particular camera handles exposure when using manual lenses.

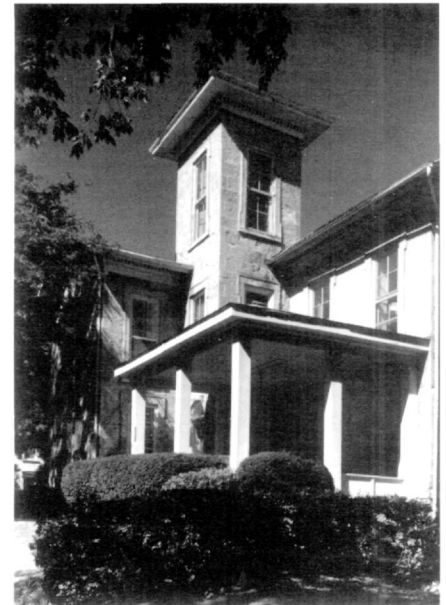
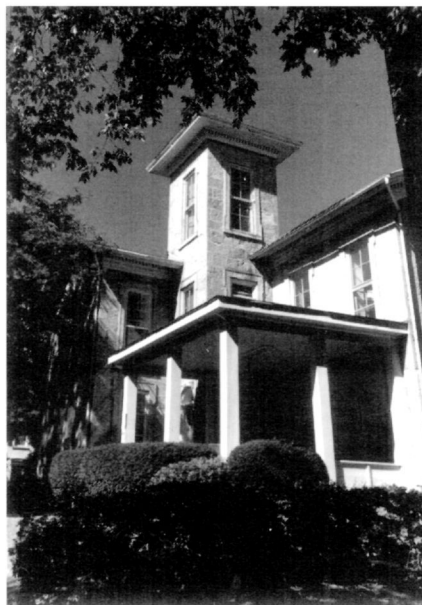
Some cautions about using PC lenses in the field:

First, always take meter readings before shifting the lens. Otherwise, exposure readings will be incorrect.

Second, I think it is better to undershift a little than to overshift a PC lens. Therefore, I recommend not trying to align vertical lines in perfect parallelism, but to accept slight convergence or undershifting. This gives a building a natural appearance and avoids the disaster of producing an overshifted photograph.

Third, good hand-held photographs can be taken with shifted lenses if you are careful about it. If you find this too difficult, mount the camera on a tripod which will hold it steady for you, but be sure your tripod is positioned properly. (See later discussion.)

Fourth, I recommend you use a special grid viewfinder screen for most architectural subjects. The exception would be an historic building that is leaning. In this case, the grid would be useless.

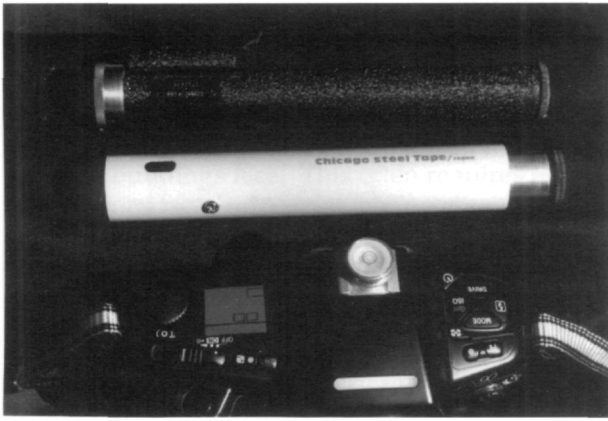


Three photos of the 1858 Robert M. Bashford House, Madison, Dane County, Wisconsin, placed on the National Register in 1973. (Jeff Dean, 1996)

In the first photo, the camera has been leveled, but no shift lens was used. The top of the house isn't in the picture at all!

The second shows what results when the same camera without a shift lens is tilted to get the whole house. The house looks like it is falling over backwards.

The third view, from the same angle, but this time with a shift, or PC, lens gives the results wanted.



Three levels. The top two are hand levels and the bottom is a bubble level mounted on the camera hot shoe. (Jeff Dean, 1996)

I like to use a hand level for small-format architectural photography. They are available at drafting supply and land surveyor supply stores. Resembling a small telescope, the hand level contains a horizontal cross-hair and bubble level that allows me to locate camera-aiming targets on a building that are at the same level as my eye. The better hand levels offer modest magnification, which provides for more accurate targeting. An alternate way of leveling your camera is with the assistance of a bubble level mounted in the camera hot shoe. This works fine if you work exclusively with a tripod. Personally, however, I find that using a hand level, without a tripod, gives me more accurate results than a diminutive bubble level with a tripod.

Other lenses I use for a typical job include moderate telephoto lenses, including zoom lenses, for close-up detail views. On rare occasions, I have even used a 500-mm-telephoto lens to move in on a distant detail; this, however, is not routine.

Finally, I pack the widest-angle lens I own, currently 20mm, which is often not wide enough for interiors of small rooms. It seems that when it comes to interior photographs of buildings, I can never have a lens with a focal length that is too short. Even a lens with a 20-mm focal length, however, has to be used carefully. It can induce radical convergence of lines when a camera's film plane is not perpendicular to the ground plane.

Loaded up, I am ready to go get my photographs. I know which way the first building faces, so that determines when I have to get to it if I want sunlight on the primary facade. Remember, the sun rises in the east, is overhead at solar noon (don't forget to compensate for daylight-saving time), and sets in the west. I would recommend that you get there in the morning, if the building faces east. This seems almost too obvious to state, but many of the photographs submitted to our state historic preservation office show a lack of understanding of this basic point.



Three photos of the State Historical Society of Wisconsin, Dane County, Madison, Wisconsin, placed on the National Register in 1972.

In the first, the light is shining directly on the front facade of the building. The contrast is so great that details are lost in the shadow areas.

The second was taken with the light over the photographer's shoulder, from the left. There is greater depth, less contrast.

The third is backlit.

The relationship of the building to the sun is absolutely critical for capturing a decent photograph. So is the atmosphere. High humidity brings with it haze that turns a sky from deep blue (with color film) or a dark tone (in filtered black-and-white film) to an uninspiring whitish-gray. Partly cloudy weather means I get to stand around a lot waiting for the sun to peek out. Changing weather causes me to stomp on my accelerator to try to get there before the clouds do. I (and other photographers) have many tales to tell about successes and failures resulting from the disastrous or happy convergence of time, traveling speed, and rapidly moving weather systems.

A caution here about property owners and their pets. (While this is not truly architectural photography, it certainly is an issue in the photography of architecture!) Request permission if you want to go on someone's property. You do have the right to photograph buildings you can see from the public right-of-way. However, do not insist on that right if questioned by a property owner. Be sure you have official i.d. and your boss's phone number with you. Finally, dogs can run very fast, love to bark and growl at anyone carrying a camera, and often have full sets of canines. Usually a car with closed doors and windows provides adequate protection from them.

At the site, I check out a historic building before I start photography. I walk around it, looking for angles, shadows, and potential frames in the environment to place it in its setting. If it's a single-family house, I knock on the door and announce my presence. In such cases, the owner normally is proud of his or her dwelling and may well have old photographs of it and historical documentation.

That done, I decide what general views I want, and which of the lenses I have with me would work best. Close-in trees or other buildings often call for my widest shift lens—28mm or even 24mm. When I can go with a 35-mm shift lens for overall views, I prefer to do that because there is little distortion and less of a problem with light falloff at the edges of the image at extreme shifts. Normally, I use the fastest shutter speed possible and reasonable, certainly no slower than 1/125th-second speed for hand-held shooting. This is one reason I prefer a fast *Kodachrome* film for slides.

Mounting the lens, I use the camera as a framing device as I move around again to check the best angles. With initial views selected, here is how I proceed to take each overall exterior view:

1. I sight on the building with my hand level and pick some spots that are at eye level.
2. With my camera set to manual control, I center the lens, mount a filter, and approximate the desired view while setting the exposure. Later, if I reset the exposure, I re-center the lens.
3. With exposure set, I aim the camera at the eye-level-point.
4. While holding the camera body steady, I shift the lens as needed. If, when you are doing this, you become uncertain, center the lens again and re-aim the camera at the point you identified with your hand level. Many photographers prefer to use a tripod (certainly this is the most accepted procedure), but I find that a tripod is difficult to set accurately, and if it is set incorrectly every photograph then taken will be useless. I have more consistent success (in good light conditions) aiming a hand-held, grid-screen-equipped 35mm SLR, after consulting a hand level.
5. I squeeze the shutter to take the photograph. Never punch the shutter. (If you are using a tripod, use a cable release.)

When exterior views are completed, I photograph architectural details and ornamentation, often with telephoto or zoom lenses.

If interior views are called for and possible, I bring out a tripod and wide-angle lenses and head inside. For National Register photography purposes, you usually can take perfectly fine interior photographs using available light. Interior photography is difficult, especially in daylight when uncovered windows are in view. In such cases, bracket exposures on the side of seeming overexposure, and expose more for shadows than bright areas. (Another way to do this is to take a meter reading of the lightest area in the photograph and one of the darkest areas and average the two readings.) Most interior photographs arriving in our office are badly underexposed because exposure meters are overwhelmed by light sources within the views. Err, therefore, on the side of overexposure when bracketing.



Interior detail of the Green County Courthouse, Monroe, Green County, Wisconsin, placed on the National Register in 1978. The camera was equipped with a shift lens and was mounted on a tripod. The photographer used available light. (Jeff Dean, 1980)

When I am finished with my tasks, I return home with lots of exposed film for processing. When I get film processed, I request simply film development and contact sheets—no enlargements at this point. When I select views for printing that is where the hard work begins—work that needs to be reinvented regularly.

If you do your own printing and processing, or your agency has good in-house printing, count your lucky stars. Finding good black-and-white printing in the commercial market today is very difficult and requires continual sleuthing of potential vendors, especially if you do not live in a large city. I have experienced a regular turnover of printers. Typically, I find a one-man shop which will do good work to my specifications, including the use of fiber-base paper, careful focusing of the enlarger, and the type of archival processing that Athearn describes so well. That shop owner then becomes very successful and hires new employees. Somewhere around this time, prices soar and print quality declines to an unacceptable level as the talented owner becomes a personnel and business administrator and may even buy an automated printing machine guaranteed to produce acceptable prints. About then another one-man shop opens and the cycle repeats itself.

This has happened to my agency at least three times in the past decade, and it will happen again. As black-and-white processing and printing become ever more arcane, this situation will deteriorate further. The ultimate answer may be the establishment of permanently staffed, professional darkrooms in major state photographic archives and museums. It is likely in time that quality, affordable black-and-white printing no longer will be available from local commercial outlets.

Currently, the State Historical Society of Wisconsin's staff is preparing text and illustrations for *Buildings of Wisconsin*. Co-edited by Geoffrey Gyrisco and Marsha Weisiger, it will be one of a series of books being published by Oxford University Press and the Society of Architectural Historians in their joint *Buildings of the United States* series. In this project, we are using a number of photographers, both paid and volunteer. I have been especially pleased by the work of volunteer photographers from non-photographic professions who have learned, with only minimal coaching, to take excellent photographs of architecture. This has reaffirmed my belief that anyone possessed of common sense and visual sensitivity, and who has appropriate training and the minimum of proper 35-mm SLR equipment, can learn to take good, publishable photographs for the National Register. ■

IV. PREPARING PHOTOGRAPHS FOR SUBMISSION TO THE NATIONAL REGISTER

BASIC REQUIREMENTS

Basic requirements for photographs to be submitted to the National Register are given in **III. Documenting Historic Places on Film**.

In addition, photographs submitted for National Register nominations must be:

- At least 3- x 5- inches, but 8- x 10- inches is preferred;
- Printed on single-weight paper with a glossy finish;
- Correctly processed and thoroughly washed according to manufacturers' instructions;
- Labeled either in pencil on the reverse, or on a continuation sheet (**See below** for detailed instructions);
- Unmounted (do not staple, clip, or glue photographs to nomination form);
- Taken with black and white film only;
- Complete enough to fully illustrate the property being nominated; and
- Well-composed, sharply focused, and clear.

PAPERS

The National Register of Historic Places will accept black and white photographs printed on resin-coated paper, however, it is preferred that prints be produced to archival standards using fiber-base paper. Prints submitted on resin-coated paper must have no evidence of residual chemicals, fading, or yellowing.

LABELING PHOTOGRAPHS

Photographs should be labeled with the following information:

- Name of property or, for districts, the name of the building or street address, followed by the name of the district;
- County and State where the property is located;
- Names of photographer and/or assistant;
- Location of original negative;
- Date of photograph;
- Description of view, indicating direction of camera; and
- Photograph number. (For districts, use this number to identify vantage point on the accompanying sketch map.)

Use a No. 1 or No. 2 pencil to label photographs on fiber-base paper. Resin-coated paper will not accept pencil. Never use an ink pen on either fiber-base or resin-coated paper, because it can leak through the emulsion and damage the image. However, a permanent audiovisual marking pen or pencil may be used. Also, permanent, soft-tip pens can be used on the front margins, if applicable. In addition, do not use adhesive labels on photographs, and do not mount photographs on the nomination form itself.

An acceptable alternative for identifying photographs is on a National Register Continuation Sheet (NPS 10-900-a). Number each photograph and write the name of the property, county and State on the back with a soft pencil. List the rest of the required information on the continuation sheet. Information common to all photographs, such as the photographer's name, or the

location of the negatives, can be given once accompanied by a statement that applies to all of the photographs.

ADHESIVE LABELS

Photographs with adhesive labels will not be accepted, because the labels separate from the photograph and their acidity may cause the photograph to deteriorate.

USE OF NATIONAL REGISTER PHOTOGRAPHS

By allowing a photograph to be submitted to the National Park Service with a National Register form, **photographers grant permission to the National Park Service** to use the photograph for publication and other purposes, including: putting it on the World Wide Web; duplication; display; distribution; study; publicity; and audiovisual presentations.



Nashold 20-sided barn. Town of Fountain Prairie, Columbia County, Wisconsin. (Jeff Dean, 1987)

V. STORAGE OF FILM AND PRINTS

Cool, dark, dry places are always best for conserving photographic media. Black and white media should be stored in dark areas with no more than 50 per cent humidity. While these are ideal archival conditions, they are rarely practical for most people. The general rule is to keep both prints and negatives in as cool, dark, and dry a place as possible.

Negatives should be kept in an acid free, dust free, dark environment using stable (low pH, i.e., low acid) envelopes in baked enamel filing cabinets. Current polypropylene and polyacetate holders are often termed archival. However, due to newness, no one knows how long they will last. Polyvinyl chloride (PVC) slide/negative holders should never be

used, because they give off gasses that literally destroy emulsions. Easily identified by their glossy look and slippery texture, PVC slide holders are generally made of much heavier plastic than current holders.

Cardboard, black construction paper, manila envelopes, paper envelopes, non-rag bond paper, print holders such as so-called magnetic albums and albums that use non-acetate plastic are all unacceptable for storage. When buying albums, it is important to make sure the leaves are acetate plastic.

Acid-free paper envelopes are the best method for storing both prints and negatives. The only plastic that is acceptable for archives is non-PVC, as noted above. Film holders and print

sheets are available in archival plastic, but for absolute safety and long-term storage, acid-free paper envelopes are superior storage media. Mylar transparent sleeves should be used for film.

There are numerous suppliers of archival photographic storage materials as well as information on photographic conservation. Two excellent publications devoted to the conservation, care, and permanence of photographs include: *Eastman Kodak's Conservation of Photographs*, (Rochester, New York: Eastman Kodak Company, 1985) and Henry Wilhelm's *The Permanence and Care of Color Photographs*, (Grinnell, Iowa: Preservation Publishers, 1993).



Statue, Garden of Shadowlawn, West Long Branch, New Jersey. (Walter Smalling, 1978)

APPENDIX I

FORMAL DOCUMENTATION OF HISTORIC PROPERTIES

Prior to the mid-1930s, there was no national program designed to systematically document historic properties. Local and state historical societies recorded sites and buildings, but there were no standards that provided guidelines for the long-term preservation of documentation materials. The establishment of the Historic American Buildings Survey (HABS) in 1933, and the Historic American Engineering Survey (HAER) in 1969, administered by the National Park Service, resulted in national documentation standards. A HABS (and later HAER) Collection was established in the Library of Congress to store those records.

Photography is an important part of HABS/HAER documentation. In addition to measured architectural drawings and written historical reports, photographs provide views of the property. Because photographs must meet architectural or engineering standards for accuracy, HABS/HAER will accept only large format negatives corrected for perspective distortion. HABS will not accept negatives smaller than 4- x 5-inches nor larger than 8- x 10-inches. The preferred size is 5- x 7-inches. Only a large-format view camera can be fully adjusted to compensate for distortion and perspective problems. Additionally, a large-format negative provides

a wealth of detail that is often impossible to obtain with smaller format film.

HABS/HAER requires the following equipment and film:

1. **Lenses.** No soft focus lenses (or filters) may be used. The complement of lenses will include at least one normal focal length, one wide angle, and one telephoto lens. They must have adequate covering power to accommodate both front and rear view camera movements without *vignetting*. (See **Glossary**.)
2. **Filters.** A polarizing filter may be useful. A medium-yellow filter enhances details.
3. **Film.** A fine-grain, cut film with a minimum resolving power of 80 lines per millimeter high-contrast range, and 30 lines per millimeter low contrast range is acceptable. Films such as *Tri-X*, *T-Max*, or *Plus-X*, etc. are suitable. Film packs are not accepted. Color films, either negative or positive, are absolutely not acceptable. For copy work (old photographs, etc.) *Kodak Professional Copy Film Type 4125*, or equivalent, must be used to make continuous-tone copy photographs. For copy line drawings, *Kodalith*, or similar film must be used. All films must be fresh (in date) and have a polyester base.
4. **Paper.** All documentary photographs produced for HABS/HAER must be printed on fiber-base paper. It should be single-weight, glossy, and processed to archival standards. The use of resin-coated paper is unacceptable.

PROCESSING HABS/HAER PHOTOGRAPHS

In order to produce archivally stable photographs, both negatives and prints must be handled carefully. The primary culprit in film or paper damage is a fixer residue. All film and paper should be treated in a cleaning bath such as *Permawash*, *Kodak Hypo Clearing Agent*, or *Orbit* bath. Films and papers must be washed both before and after the hypo-clearing treatment. A two-hour wash is strongly recommended to assure removal of all fixer, unless a hypo-clearing or neutralizing agent is used. HABS/HAER has found that film and prints developed and fixed using machine processors repeatedly fail testing for hypo. Therefore, neither machine-processed prints nor films are acceptable for HABS/HAER documentation.

PRINTING HABS/HAER PHOTOGRAPHS

HABS/HAER negatives are large format. Easily yielding considerable detail, these negatives must be contact printed only. Prints should be made on the next largest size of paper (i.e., a 4- x 5-inch print on 5- x 7- inch paper). Prints should not be large than 8- x 10-inches. All edges of the negative **must** show in the print. The prints should be made on single-weight, glossy-finish, fiber-base paper. Resin-coated paper is not acceptable.

BIBLIOGRAPHY

- Athearn, Frederic J. *Habitat In the Past: Historical Perspectives of Riparian Zones on the White River*. Denver: Bureau of Land Management, 1988.
- _____. *A Window to the Past—A View to the Future: A Guide to Photodocumenting Historic Places*, 2nd ed. Denver: Bureau of Land Management, 1994.
- _____. "Preservation Photography". *Studio Photography*. Volume 17, Number 5 May, 1981.
- Barger, Susan. *Bibliography of Photographic Processes in Use Before 1880. Their Materials, Processing and Conservation*. Rochester, New York: Rochester Institute of Technology, 1980.
- Boucher, Jack E. *A Record in Detail: The Architectural Photographs of Jack E. Boucher*. Columbia, Missouri: University of Missouri Press, 1988.
- Buchanan, Terry. *Photographing Historic Buildings for the Record*. London: HMSO, 1983.
- Burns, John A., ed. *Recording Historic Structures*. Washington: American Institute of Architects, 1989.
- Casper, Dale E. *Photography and Architecture: Journal Articles, 1982-1989*. Monticello, Illinois: Vance Bibliographies, 1989.
- Clark, Walter. "Care of Photographs." Vol. 17, *The Time-Life Library of Photography*. New York: Time-Life Books, 1972.
- Coe, Brian. *The Birth of Photography—The Story of the Formative Years, 1800-1900*. London: Ash and Grant, 1976.
- Dean, Jeff. *Architectural Photography: Techniques for Architects, Preservationists, Historians, Photographers, and Urban Planners*. Nashville: American Association for State and Local History, 1981.
- _____. *Photographing Historic Buildings*. *APT Bulletin*. Vol XIV, No. 4. Ottawa, Ontario: Association for Preservation Technology, 1982.
- De Mare, Eric S. *Photography and Architecture*. New York: Praeger, 1961.
- Darrell, Peter G. *Photography in Archaeology and Conservation*. Cambridge: Cambridge University Press, 1989.
- Doumato, Lamia. *Architecture and Photography*. Monticello, Illinois: Vance Bibliographies, 1987.
- Eastman Kodak Company. *Conservation of Photographs*. Rochester, New York: Kodak, 1985.
- _____. *Photography With Large-Format Cameras*. Rochester, New York: Kodak, 1973.
- Hughes, Jim. *The Birth of A Century: Early Color Photographs of America*. New York: Tauris Parke Books, 1994.
- Jeffrey, Ian. "Photography: Representing the Present". *Annals of the Architectural Association*. Fall 1988, p. 52.
- Lobron, Barbara. "19th Century America—In Color?" *Popular Photography*. Vol. 58, No. 9. September, 1994.
- Mangan, Terry W. *Caring For Photographs: Archival Collecting of Photography For Small Museums*. Denver: State Historical Society of Colorado, 1975.
- May, Linda L. "History Through the Camera's Eye: Preserving America's Architectural and Engineering Heritage". *Photo Electronic Imaging*. Volume 36, Number 6 June, 1993.
- _____. "The Last Great Mining Boom: The Nuclear Industry in Western Colorado". *Rangefinder*. September, 1994.
- McGrath, Norman. *Photographing Buildings Inside and Out*. New York: Whitney Library of Design, 1987.
- McKee, Harley J. *Recording Historic Buildings*. Washington, D.C.: Government Printing Office, 1970.
- Miner, Ralph W. *Conservation of Historical and Cultural Resources*. Chicago: American Society of Planning Officials, 1969.
- Molitor, Joseph W. *Architectural Photography*. New York: Wiley, 1976.
- Morgan, William. *Portals: Photographs*. Dublin, N.H.: William L. Bauhan, 1981.
- National Park Service. *Transmitting Documentation to HABS/HAER/WASO*. Washington, D.C.: National Park Service, 1985.
- _____. *Specifications for the Production of Photographs*. (Washington, D.C.: National Park Service, n.d.)
- _____. *Photographic Specifications, Historic American Buildings Survey, Historic American Engineering Record*. San Francisco, CA: National Park Service, 1989.
- Oliver, Joe. "Architectural Photocomposition". *Photomethods*. Volume 32, (March, 1989), p. 34.

- Orth, Thomas. *A Selected Bibliography on Photographic Conservation*. (Rochester, New York: Rochester Institute of Technology, 1981).
- Ostroff, Eugene. *Conserving and Restoring Photographic Collections*. Washington, D.C.: American Association of Museums, 1975.
- _____. "Preservation of Photographs" *Photographic Journal* Royal Photographic Society. Vol. 107 October, 1967, pp. 309-314.
- _____. "Photographic Preservation: Modern Techniques". *Royal Photographic Symposium*, 1974.
- Plowden, David. *Bridges: The Spans of North America*. New York: Viking Press, 1974.
- _____. *Industrial Landscape*. Chicago: Chicago Historical Association, 1985.
- Robinson, Cervin. *Architecture Transformed: A History of the Photography of Buildings From 1839 to the Present*. New York: Architectural League of New York, MIT Press, 1987.
- Rothenberg, Jeff. "Ensuring the Longevity of Digital Documents". *Scientific American*. January, 1995, pp. 42-47
- Shulman, Julius. *The Photography of Architecture and Design: Photographing Buildings, Interiors, and the Visual Arts*. New York: Whitney Library of Design, 1977.
- Vance, Mary A. *Architectural Photography: A Bibliography*. Monticello, Illinois: Vance Bibliographies, 1981.
- Weinstein, Robert A. and Larry Booth. *The Collection, Use and Care of Historical Photographs*. Nashville: American Association for State and Local History, 1977.
- White, Anthony G. *Architectural Photography: A Selected Bibliography*. Monticello, Illinois: Vance Bibliographies, 1983.
- Wilhelm, Henry. *The Permanence and Care of Color Photographs*. Grinnell, Iowa: Preservation Publishers, 1993.

GLOSSARY

Aperture—See *f/stop*, below.

Baryta substrate or base—The paper upon which emulsion is coated. Baryta is a fiber base paper that is more stable than plastic coated paper.

Brightframes—These are commonly found in range finder type cameras. These are the outlined (rectangular) box seen through the viewfinder that represent the area of the actual photograph. What appears outside of the frame will not be recorded on film.

Contact Print—A contact print is made by “contacting” the negative to a sheet of paper and exposing it. The result is a direct print that is the same size as the negative.

Film—the medium used to capture an image.

Film Speed (ISO)—An arbitrary number placed on film that tells how much light is needed to expose the film to the correct density. Generally, the lower the ISO number, the finer grained and slower a film. ISO means International Standards Organization. This term replaces the old ASA speed indicator. The slower the film, the more light is needed to expose it.

Black and White

ISO 25-100—Very fine grained and low contrast.

ISO 100-400—Fine to Medium grain and higher contrast.

ISO 400-3200—Heavy grain and considerable contrast.

Color Negative Films

The same rule applies to negative color films as black and white films. The lower the ISO number, the finer the grain.

Transparency Films

These are color reversal films. Again, in general, the lower the ISO the finer the grain, and the lower the contrast. Recently, new film emulsions in the ISO 50 to ISO 100 range have been released. They are very fine grained, but are also extremely color saturated. This means the colors are bright and vivid, but not necessarily accurate.

Fixer (Hypo)—A chemical, sodium thiosulfate, used to remove residual silver halides (grain) from films and prints when processing them. Fixer “fixes” the remaining silver halides in place on either film or prints. Fixer is also called *hypo*.

f/stop—A metal plate or diaphragm that controls the amount of light entering a lens barrel. In most cases, the diaphragm is iris shaped. The larger the hole in the diaphragm, the smaller the *f/stop* number. For instance, *f/1.4* is wide open, whereas *f/16* is the smallest hole, or fully stopped down. The reasons to use *f/stops* are: (1) to get a sharper picture (the smaller the *f/stop* the sharper the image); (2) to get greater depth of field (the smaller the aperture, the greater the depth of field); and (3) to control the exposure (the smaller the aperture, the less light gets in).

Gelatin-base films—All films are gelatin based. Gelatin is used to bind the emulsion to the plastic film base. This technology has been available for more than a century.

Large format—Generally any film format in which negatives are larger than 4 x 5 inches is considered large format. Other sizes include 5 x 7 inches, 8 x 10 inches, and 11 x 14 inches. Most large format cameras are view cameras, field cameras, or specialty cameras.

Medium format—Any camera that uses 120 size roll film is considered to be medium format. This film is 6-cm wide and yields images that can be from 6 cm x 6 cm to 6 cm x 9 cm. The format is between 35 mm and 4 x 5 inches in size.

Negative film—A reversed (negative) image is created when this type of film is used. Black and white and color negative films are called negative films. The negative image is reserved. Whites are black and blacks are white. When printed, a positive image results with whites being white and blacks being black. And colors are correctly imaged when printed.

Oblique photographs—These photographs are neither perpendicular nor parallel to a given line or surface. Rather than being vertical or horizontal, oblique photographs are shot at an angle (45 degrees, for example).

Parallax problems—This occurs mainly with range finder and twin lens reflex cameras. The distance between the center of the lens and the viewfinder causes parallax. The closer the lens is focused to the subject, the more evident the parallax. The top of the image will be cut off if the range finder or viewfinder is not corrected for parallax.

PC—See *Perspective Control Lens*

Perspective-control lens — A small- or medium-format manual lens that shifts off its axis in any direction on sliding tracks to correct perspective convergence; shifting is controlled by a screw, a rotating control ring, or by friction.

Positive film—A positive image (such as color slides) is created when this type of film is used. Color transparencies are positive films.

Selenium—A chemical that is used to tone prints for longevity. Selenium leaves the prints with a silver look. Toned prints are less subject to light damage and oxidization.

Shift lens — See *Perspective-control lens*.

Silver halide—The silver crystals that make up an image on a negative or print. When exposed to light, they create an image. Those that are not exposed are washed off, leaving either a negative (film) or positive (print) image.

SLR — See Single lens reflex.

Single lens reflex—A type of camera that uses a prism and mirror system allowing viewing of the subject through the taking lens of the camera. The photographer looks through the rear of the camera and sees the subject (and focuses) through the lens. When the picture is taken, the mirror swings out of the way and the film is exposed.

Small format—Refers to a small size film such as 35-mm films. The image size is 24 x 36 mm for 35-mm negatives. The sizes of the small format films are: 126, 828, and 110.

Thermal dye prints—A process for generating computer (digital) images on paper using a printer. The process uses thermal dyes to create the color image.

Toning and toners—Changing the visual appearance of a silver image by converting some or all of the silver halides to a different type, resulting in an image tone. This can be accomplished with either prints or negatives. The most common toning colors are brown and sepia.

View camera—A large format camera that has a front and rear standard, bellows between them, and rides on a rail. The photographer views the image from the rear of the camera on a ground glass screen. The camera is capable of swings, tilts, and shifts, which makes it ideal for architectural photography. Due to its size and weight, a view camera is generally used in a studio setting.

Viewfinder screen — In SLR camera, this is the screen upon which a lens projects its image for composition and focusing. The photographer views the viewfinder screen through a pentaprism that makes the image eye-level and so that it appears right-side-up and not reversed. For architectural photography, a viewfinder screen is etched with horizontal and vertical lines resembling the grid of a tic-tac-toe board to aid in alignment and composition.

Vignetting—This refers to the cutting off of image edges (usually the corners) when something interferes with the front of the lens. The most common cause of vignetting is a lens shade that is the wrong size for the focal length being used and using a PC lens at an extreme shift, especially with filters. Wide-angle lenses are often vignettted, because a lens hood was used that was not wide enough.

APPENDIX II: LIST OF NATIONAL REGISTER BULLETINS

The Basics

How to Apply National Register Criteria for Evaluation *

Guidelines for Completing National Register of Historic Places Form

Part A: How to Complete the National Register Form *

Part B: How to Complete the National Register Multiple Property Documentation Form

Researching a Historic Property *

Property Types

Guidelines for Evaluating and Documenting Historic Aids to Navigation *

Guidelines for Identifying, Evaluating and Registering America's Historic Battlefields

Guidelines for Evaluating and Registering Historical Archeological Sites

Guidelines for Evaluating and Registering Cemeteries and Burial Places

How to Evaluate and Nominate Designed Historic Landscapes *

Guidelines for Identifying, Evaluating and Registering Historic Mining Sites

How to Apply National Register Criteria to Post Offices *

Guidelines for Evaluating and Documenting Properties Associated with Significant Persons

Guidelines for Evaluating and Documenting Properties That Have Achieved Significance Within the Last Fifty Years

Guidelines for Evaluating and Documenting Rural Historic Landscapes *

Guidelines for Evaluating and Documenting Traditional Cultural Properties *

Nominating Historic Vessels and Shipwrecks to the National Register of Historic Places

Technical Assistance

Contribution of Moved Buildings to Historic Districts; Tax Treatments for Moved Buildings; and Use of Nomination Documentation in the Part I Certification Process

Defining Boundaries for National Register Properties*

Guidelines for Local Surveys: A Basis for Preservation Planning *

How to Improve the Quality of Photographs for National Register Nominations

National Register Casebook: Examples of Documentation *

Using the UTM Grid System to Record Historic Sites

The above publications may be obtained by writing to the National Register of Historic Places, National Park Service, 1849 C Street, NW, NC 400, Washington, D.C. 20240. Publications marked with an asterisk (*) are also available in electronic form on the World Wide Web at www.cr.nps.gov/nr, or send your request by e-mail to nr_reference@nps.gov.