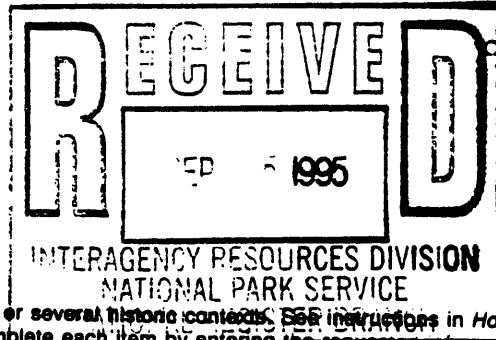


United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form



This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in How to Complete the Multiple Property Documentation Form (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items.

New Submission Amended Submission

A. Name of Multiple Property Listing

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

B. Associated Historic Contexts

(Name each associated historic context, identifying theme, geographical area, and chronological period for each.)

The Historic Landscape Design of the National Park Service,
1916 to 1942

C. Form Prepared by

name/title Linda Flint McClelland, Historian


organization National Register of Historic Places date August 8, 1995

street & number Post Office Box 37127 telephone 202-343-9536

city or town Washington state DC zip code 20013-7127

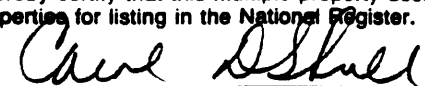
D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. (See continuation sheet for additional comments.)


 Signature and title of certifying official
National Park Service
 State or Federal agency and bureau

September 5, 1995
Date

I hereby certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.


 Signature of the Keeper

Oct 4, 1995
Date of Action

Table of Contents for Written Narrative

Provide the following information on continuation sheets. Cite the letter and the title before each section of the narrative. Assign page numbers according to the instructions for continuation sheets in *How to Complete the Multiple Property Documentation Form* (National Register Bulletin 16B). Fill in page numbers for each section in the space below.

	Page Numbers
E. Statement of Historic Contexts (If more than one historic context is documented, present them in sequential order.)	1
F. Associated Property Types (Provide description, significance, and registration requirements.)	164
G. Geographical Data	195
H. Summary of Identification and Evaluation Methods (Discuss the methods used in developing the multiple property listing.)	196
I. Major Bibliographical References (List major written works and primary location of additional documentation: State Historic Preservation Office, other State agency, Federal agency, local government, university, or other, specifying repository.)	207

National Register of Historic Places

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

E. Statement of Historic Contexts

THE HISTORIC LANDSCAPE DESIGN OF THE NATIONAL PARK SERVICE, 1916 TO 1942¹

From 1917 to 1942, the National Park Service forged a design ethic for the development of natural parks that protected significant natural features and harmonized roads, trails, and buildings, with the natural scenery. The origins of national park landscape design lay in the naturalistic landscape gardening tradition promoted in the United States by Andrew Jackson Downing and practiced in private pleasure grounds and urban parks in the 19th century by Frederick Law Olmsted and others. By the time the National Park Service was organized and began developing the parks for visitor use, landscape architects and theorists including Henry Hubbard, Frank Waugh, Wilhelm Miller, and Jens Jensen heralded the emergence of an informal landscape style inspired by the scenic beauty of the American landscape. Called the Natural or Modern American style, this style called for the development of vistas, informal principles of design, and native rock and plant materials to harmonize manmade construction with a natural setting. The style ideally suited the needs of national park designers, making it possible for them to uphold the two-fold policy of the National Park Service to make the parks accessible for public enjoyment while preserving the parks and objects within.

By the late 1920s, a process of planning and design was in place that would guide the development of national parks for several decades. Foremost was a program of master planning which aligned the National Park Service's growing programs of forest protection, engineering, interpretation, and visitor safety with the mission and purpose of each park. These plans set forth an ideal plan for the future development and preservation of each park. Standard specifications and designs were developed for the construction of roads, trails, bridges, guardrail, and other structures that could be tailored to the natural character of each park. These standards were based on the overriding principles of naturalism and scenery preservation and ensured that manmade construction in the parks was inconspicuous and harmonized with the natural setting. Naturalistic practices in construction, often described as "rustic," called for native materials of timber and rock and methods of pioneer craftsman and woodsmen. The design of roads called for careful siting of roads in relationship to natural topography and scenery, protecting natural features, minimizing the amount of cut and fill, sloping the banks of the road and allowing the vegetation to recover in such a way that blended the roadway into the natural topography and created the illusion that nature had never been disturbed. A process called "landscape naturalization" developed in which native trees, shrubs, and other vegetation were planted to erase the scars of construction, to obliterate the traces of old roads, to restore areas previously logged, farmed or burnt, and to beautify developed areas within the parks.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

During the 1930s master plans guided the construction of roads, trails, and other facilities with the abundant funds and labor provided by public works and emergency conservation work (later Civilian Conservation Corps). The principles and techniques developed in the 1920s were practiced and, in some cases, further refined in the 1930s as park development proceeded on a massive and unprecedented scale. During the New Deal, the National Park Service also influenced the development of state parks nationwide by supervising emergency conservation work and Works Progress Administration (WPA) projects and by producing technical information on the design of park structures and facilities and landscape conservation, trail construction, and other topics.

This statement of historic contexts is an adaptation of *Presenting Nature: The Historic Landscape Design of the National Park Service, 1916 to 1942* (Washington, D.C.: National Park Service, 1993) by Linda Flint McClelland. This multiple property documentation form is intended to provide a national context for identifying and evaluating the wide range of historic park landscapes and landscape features in the national parks and in hundreds of state and local parks developed by the Civilian Conservation Corps (CCC) during the New Deal under the direction of the National Park Service. Properties related to this context may be nominated to the National Register of Historic Places under the multiple property listing, Historic Park Landscapes in National and State Parks. Although endnotes are presented in the following text, they are not required on multiple property documentation forms.

Origins of Naturalistic Park Design

- Writings of Andrew Jackson Downing
- The American Park Movement
- The American Style of Naturalistic Landscape Design
- Sources of Rustic Architectural Design
- A Movement for National and State Parks

The Founding of the National Park Service and the Landscape Architecture Profession

Early Development of National Parks

- 1918 Policy of Harmonization
- The Role of the Landscape Engineer
- Development of Park Roads

The Western Field Office, 1927-1933

- Advances in the Landscape Design of Park Roads
- Construction of Trails
- The Design of Park Structures
- A Program of Landscape Naturalization
- E. P. Meinecke and Campground Planning
- 1932 Study on Park Policies
- A Process of Park Planning

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

National Parks during the New Deal

Public Works Administration
Emergency Conservation Work in National Parks
Development of Scenic Parkways

New Deal for State Parks, 1933-1942

Emergency Conservation Work in State Parks
Submarginal Lands and Recreational Demonstration Areas
Works Progress Administration
The Park, Parkway, and Recreational Area Study
Portfolios and Publications
Conclusion

Origins of Naturalistic Park Design

The development of national and state parks drew from the mainstream principles and practices of the American landscape design profession. To meet the challenge of subordinating development to natural character and scenic values, park designers adopted naturalistic and informal practices of landscape design rooted in a nineteenth-century philosophy of scenery preservation and landscape development promoted by Andrew Jackson Downing and practiced by Frederick Law Olmsted, Sr., and others. This philosophy advocated practices for accommodating development, whether roads or structures, that caused minimal disruption of natural topography and that blended manmade structures with natural surroundings. Commonly referred to as rustic, this naturalistic ethic of design called for the preservation of natural features; the enhancement and presentation of scenic views, natural vegetation, streams, and rock outcroppings; and the use of native materials for construction and for naturalistic plantings. It also drew from architectural styles such as the Shingle style, the Adirondack style, the Prairie style, and the vernacular forms and methods of pioneer settlers and indigenous cultures, which all used native materials of log, wood, stone, clay, or thatch and situated manmade elements in harmony with the natural topography and surroundings. All of these influences were embraced at the turn of the century by the Arts and Crafts movement, which fostered an appreciation of handcrafted forms, pioneer and indigenous prototypes, natural settings, and naturalistic appearances.

As heirs to this rich legacy, national park designers advanced the principles and practices of landscape design and rustic architecture as they forged a cohesive ethic of naturalism that simultaneously applied to the design of structures, the construction of roads and trails, and the successful blending of manmade and natural features of the park. Their work was aimed at presenting the scenic beauty of the parks and enhancing the visitors' experience while preserving the natural features. The principles and practices they advanced would in turn influence the design and development of state parks in the 1930s.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Writings of Andrew Jackson Downing

The landscape design of national and state parks evolved from the late eighteenth- and early nineteenth-century English landscape gardening tradition of William Kent, Capability Brown, and Humphry Repton. This tradition came to America at the beginning of the nineteenth century and was first manifested in the pleasure grounds of the wealthy along the Hudson River in New York. Country estates such as Montgomery Place were celebrated in the writings of Andrew Jackson Downing in the periodical *The Horticulturalist*. Downing's *Treatise on the Theory and Practice of Landscape Gardening*, first published in 1841, was the standard American guide for landscape gardening in the nineteenth century and was revised by a number of authors as late as the 1920s. Downing, who had visited many English landscapes and was familiar with Repton's treatises, adapted the ideas and practices of the English designers to the American landscape and fostered a strong awareness and appreciation of a native landscape that was inherently sublime and picturesque.

Downing's writings provided a philosophical basis for preserving America's natural areas and translated the idea of "wilderness," as evocative of the sublime and picturesque, into design terms. His principles reflected the landscape interests of contemporary writers, such as Nathaniel Hawthorne, Washington Irving, William Cullen Bryant, and Henry David Thoreau, and artists of the Hudson River School, including Thomas Cole and Asher B. Durand.

Downing cultivated in the American mind an aesthetic appreciation of wild places and stimulated images of the picturesque qualities of such places. Downing was intensely aware of the tremendous power that primeval nature, with its dramatically changing landforms, variations of light and shadow, sounds of moving water, and enveloping vegetation, could exert on the human senses. His ideas were influenced by the popular writings of William Gilpin and Sir Uvedale Price. He described the Wilderness at Montgomery Place, a wooded area of the estate that retained the natural character of the Hudson River Valley and abounded with thick woods, deep ravines, outcroppings, waterfalls, and a rich understory of mountain laurel. Downing's writings elaborated on the power of changing scenery, broad and enframed vistas, wild and untamed vegetation, and rustic manmade structures in enhancing the individual's enjoyment and experience of a natural landscape. Downing's romantic vision of the sylvan retreat--with its broad vistas, rustic seats, rock steps, thatch-roofed shelters, dense thickets of native wood, and expansive terraces and porches from which distant views across open lawns could be enjoyed--captured the imagination of the designers of parks and suburban homes alike in the nineteenth century. Downing's principles would continue to attract followers well into the twentieth century, even after other styles gained popularity. These ideas would continue to shape the design of natural places for generations and found their most enduring expression in the design of state and national parks well into the 20th century.²

Downing's *Theory and Practice of Landscape Gardening* established the key components of the pleasure ground. Apart from a fashionable manor house and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

formal gardens, pleasure grounds contained serpentine drives, open meadows, winding paths, picturesque rockwork, rustic bridges, and wooded glades. Rustic summerhouses, shelters, covered seats, and pavilions of unpeeled logs and branches provided shade and seating for rest and contemplation. Natural elements--groves of hemlocks and pines, bubbling streams, rock outcrops, waterfalls, and scenic riverviews--defined the wild and untamed areas of these places. There was no limit to the variety of forms and patterns in which rustic seats, arbors, summerhouses, and such structures could be constructed. In all cases, these structures were to be appropriate to their location and use and in harmony with the scene. Downing's idea of harmonization was to blend the structure into its setting by using woodland materials and by imitating the natural form of nearby trees. He advocated rustic constructions made from the trunks and branches of trees in their natural, unpeeled, and often twisted forms. Thatching and climbing vines added attractive details to roofs and helped blend structures with surrounding vegetation. Not only did the materials of Downing's shelters echo the textures and colors of their surroundings, but also the slender sinuous elements repeated the vertical and arching forms of tree trunks and branches.³

Downing's shelters would have corollaries in the lookouts, fire towers, picnic shelters, nature shrines, and observation towers of the national and state parks. Although his designs using twisted unpeeled branches would eventually be rejected in favor of sturdier structures built of large peeled logs or native stone, Downing established the link between a structure's material and its setting and set the precedent for the use of native materials in naturalistic forms as a technique for harmonizing manmade structures with a natural setting. A similar concern for naturalism extended to the design of bridges. He recognized both the functional necessity and the decorative value of bridges. Readers were to consider the scale of the stream to be crossed, the character of the surroundings, and the appropriateness of materials to the site. Downing's design for a rustic bridge of unpeeled logs set upon stone abutments provided the prototype for the footbridge of public parks. Although primitive in form, the prototype and its method of construction would influence the evolution of sturdier bridges on national park foot and bridle trails and even park roads in the twentieth century.⁴

Although constructions of unpeeled trunks remained popular as backyard garden furnishings, by 1917 landscape architects such as Frank Waugh and Henry Hubbard criticized them as affectations and discouraged their use. Bridges made of sturdy, peeled members were more likely to withstand insect attack and rotting. The national park designers in the 1930s cautioned against such examples of "twig" architecture. In public parks, the twisted, narrow, peeled branches of Downing's bridge gave way to sturdier bridges made of larger peeled timbers with fewer irregularities. The logs for rails, stringers, braces, and trusses were selected for durability, scale with the surrounding forest, and general naturalistic character. Bridges could be designed to carry varying loads and to serve foot, bridle, or automobile traffic. Among the grandest of these were Yellowstone's Log Bridge and Mount Rainier's Shaw Creek Bridge.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Rockwork was central to naturalistic landscape design. When it occurred in nature, it added greatly to the scenic interest of a woodland, ravine, or cliff. Downing drew attention to the inherent beauty of natural outcrops of rock, especially as they created waterfalls, inclines, and precipitous peaks affording scenic vistas. He saw rockwork of native stones as a compositional element that could be introduced and manipulated, fashioned into naturalistic groupings, or enhanced by plantings. Downing offered detailed instructions for developing rockwork that were used by generations of landscape architects and, in the twentieth century, by designers of national and state parks. Used as a construction material, locally-gathered, moss- and lichened-covered boulders could unite and harmonize manmade elements with a park's natural setting. Downing encouraged the study of natural groupings, for great skill is necessary to achieve, in artificial rockwork, "a natural and harmonious expression." Downing urged the designer to begin his rockwork in a place where a rocky bank or knoll already partially existed or where an arrangement of rocks would be in keeping with the form of the ground and the character of the scene. Rocks were to be embedded in the soil to one-half or three-fourths of their depth to create the appearance of a natural rocky ridge "just cropping out." Downing also gave instructions for planting climbing vines and rock-loving plants in the soil-filled interstices of the rocks to enhance the picturesque character of a rocky bank.⁵

Rockwork using native stone would have numerous applications in the design of national and state parks, from the embedding of rough boulders as guardrails along roads or barriers in campgrounds to the massive boulder foundations and chimneys of park buildings. It would appear in the construction of park structures of all sizes, from water fountains to refectories and administration buildings. Park designers during the New Deal also used Downing's ideas to create naturalistic lakes, channelize and riprap streams, create waterfalls, rehabilitate springs, and construct buildings that emerged naturalistically from the ground. Downing's advice on planting was followed to beautify springs, control erosion along streams, restore eroded or disturbed areas, plant foundations and bridge abutments, and naturalize road and trail cuts.

Emphasizing the importance of circulation within the pleasure ground, Downing specified several types of roads and paths. His ideas, many drawn from Repton, would be developed in the public parks and parkways of the late nineteenth century and would directly influence the location and design of roads in national and state parks in the twentieth century. First was the approach road, which connected the estate or pleasure ground with the public highway and led to the house. Developed with artistic skill in easy curvilinear lines, it was laid out so that it seemed to flow naturally with the contours of the land and among stands of trees. Next was the drive, designed to lead visitors to outlying points of interest along a curvilinear route. Finally came the walks laid out in easy flowing curves for travel by foot to remote spots and scenic overlooks.⁶

Downing cultivated an appreciation for the aesthetic value of the native trees and plants of the United States and encouraged their use in pleasure

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

grounds. He praised the ash, hemlock, and fir, as well as the flowering laurels that provided a rich underwood at Montgomery Place. In *The Horticulturalist*, Downing wrote that American woods and swamps were full of the most exquisite plants; he praised the native azaleas, laurels, rhododendrons, cyripediums, and magnolias; and urged Americans to plant masses of holly (*Ilex opaca*) and laurel (*Kalmia latifolia*), broad-leaved evergreen shrubs native to the mid-Atlantic states, in their gardens. Downing praised the Virginia creeper (*Ampelopsis hederacea*), calling it the American ivy, and urged readers to plant it and other native vines and climbing plants--including wild grape, bittersweet, pipe-vine or birthwort, clematis, trumpet creeper, wisteria, honeysuckle, and climbing roses--to create a verdant canopy and drapery-like effects and relieve the manmade surfaces of walls and structures. Downing also offered his readers complete instructions for transplanting large trees relying upon Henry Stuart's instructions previously published in Great Britain.

Downing's writings on American plants influenced the selection of land set aside for national and state parks and the preservation or planting of native species to enhance the picturesque qualities of scenic areas. Downing described the effect of spiry-topped trees among rocks on the steep sides of high mountains where their forms and the direction of their growth seem to harmonize with the pointed rocky summits. Where species praised by Downing existed in nature, they readily became favored materials in the palette of national and state park designers in the twentieth century. Laurels, rhododendrons, and azaleas were used for screening and decorative purposes along the scenic drives of the Blue Ridge in Virginia and North Carolina. Virginia creeper was planted in the interstices of freshly cut rocks along Shenandoah's Skyline Drive, while laurels and azaleas were planted in masses on the drive's flattened slopes. Douglas firs, western hemlocks, and Alaskan cedar were used at Longmire to blend the village with the dense forests of Mount Rainier. Elsewhere, corollaries were found, such as the deciduous azalea (*Rhododendron occidentale*) and chinquapin (*Castanopsis sempervirens*) of Yosemite, the laurels (*Umbellularia californica*) of Sequoia, the salal (*Gualtheria shallon*) of Mount Rainier, the junipers (*Juniperus osteosperma*) of Grand Canyon's South Rim, and the evergreen sumac (*Rhus lanceolata*) of Big Bend. This appreciation for native species carried over into state parks, where rhododendrons (*Rhododendron maximum*) were planted along trails and at overlooks in Tennessee, birch (*Betula alleghaniensis*) in Michigan, laurels (*Kalmia latifolia*) in Pennsylvania, and yaupon (*Ilex vomitoria*), a native holly, in central Texas.⁷

Downing's principles established an ethic for landscape preservation and harmonization that would reach maturity in the work of the National Park Service in the 1920s and 1930s. Downing fostered an appreciation of landscape character and the sequence of landscape effects. In this he established an aesthetic basis for the preservation of natural scenery and its use for pleasure and enjoyment. He introduced the fundamental concepts of selecting viewpoints, enframing vistas, and moving the visitor through a sequence of views and scenes along curvilinear paths and steps to ensure pleasure, comfort,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

and appreciation. He stimulated an interest in vegetation and rockwork as features to be preserved and used as design elements in enhancing the beauty of a place or scene and in blending manmade structures with nature.

The conceptual foundation provided by the private pleasure ground was consciously adapted in the setting aside of natural reserves for public use and enjoyment. Yellowstone National Park, when established by law in 1872, was envisioned as "a public park or pleasuring-ground for the benefit and enjoyment of the people." The various components of the nineteenth-century pleasure ground would find practical and utilitarian counterparts in national and state parks in the twentieth century. The gatehouse would become the entrance station. Summerhouses would become overlooks and picnic shelters. Rustic seats would become sturdy benches and picnic tables. Moss- and lichen-covered rocks would be incorporated into the foundations and walls of park structures while natural outcrops and formations would be developed as points of interest and picturesque elements along trails and roads. Woodland paths would become rugged hiking and bridle trails through which visitors experienced the natural beauty of the parks. The circular drives would become the loop roads that facilitated the flow of traffic in campgrounds and picnic areas or that encircled parks to provide access and scenic views from many points. The prospect tower on the crest of a hill, which allowed visibility in all directions, would be transformed into a functional fire lookout or observation tower. And even Downing's cabinet of local curios would find its successor in trailside museums and nature shrines. Plantations of native trees, evergreen wherever appropriate, would be preserved or planted to screen undesirable views or structures. Spiry-topped trees, flowering shrubs, ferns, and climbing vines from Virginia creeper to wild clematis would be planted and transplanted to naturalize areas disturbed by construction, to erase the lines between manmade structures and natural settings, and to integrate development into the natural surroundings of the park. The ideas of Downing and American practitioners of the English gardening style would evolve through several stages, however, before being transformed into the policy and practices of the National Park Service.

The American Park Movement

The transition from the pleasure ground to the public park occurred in the second half of the nineteenth century through the work of Frederick Law Olmsted, Sr., Calvert Vaux, and others. These parks were urban and often created through earth moving and extensive planting. Natural features, such as meadows, streams, lakes, waterfalls, and wooded glens, were improved or artificially created to provide picturesque effects. Rustic features and picturesque areas such as the Ramble and Ravine in Central Park would provide miniaturized versions of Downing's wilderness at Montgomery Place.

Frederick Law Olmsted, Sr., developed six principles guiding the landscape design of public parks: scenery, suitability, sanitation, subordination, separation, and spaciousness. Scenery meant that designs that were to be

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

compatible with the natural scenery and topography and consist of "passages of scenery" and scenic areas of plantings. Sanitation called for designs that promoted physical and mental health and provided adequate drainage and facilities. Subordination required that all details, natural and artificial, were to be subordinated to character of the overall design. Separation called for the physical separation of areas having different uses and character, and for the development of separate byways for different kinds of traffic. Spaciousness called upon designer to make an area appear larger by creating bays and headlands of plantings and irregular visual boundaries.⁸

Olmsted's ideas were shaped not only by the writings of Repton, Downing, and others, but also by the example of English parks, particularly Birkenhead Park in Liverpool, which he had visited. He was familiar with the writings and work of Prince H.L.H. von Pückler-Muskau of Germany, whose private park exhibited his own interpretation of the principles of English landscape gardening. Von Pückler-Muskau advocated an approach to park building in which all design was subordinate to a "controlling scheme" and was carried out with simplicity, outwardness, and respect for nature. He had a keen understanding of the relationship between indoor and outdoor space and developed shaded sitting areas at scenic points. Perhaps most significant was the prince's ecological appreciation for native vegetation and his insistence that pleasure grounds should represent nature--nature arranged for the use and comfort of man--and should be true to the character of the country and climate to which they belonged. For this reason, the prince permitted the planting only of trees and shrubs that were native or thoroughly acclimated to the area, avoiding foreign ornamental plants.⁹

According to Olmsted, the main purpose of a park was to "exact the predominance of nature." Improvements of any type were to be subordinate to the natural character. In 1864, the commissioners of Central Park established a policy for subordinating manmade elements to the natural character of the park landscape, clearly establishing a precedent for park structures that were inconspicuous and that harmonized with nature.¹⁰

Most of the structures for Central Park were part of the circulation system. Olmsted had laid out a system of independent ways for carriages, horses, and pedestrians. To a substantial extent, the circulation network of curvilinear paths and drives unified the park and guided the visitor through a sequence of predetermined scenes. The system was designed so that one could pass through the park on foot without crossing the carriage roads. Olmsted achieved this by constructing an intricate network of bridges and tunnels, called "arches," that allowed paths and roads to cross over or under each other on separate levels. These passageways also became shelters and were designed to blend into the surrounding scenery, whether earthen banks or rock outcrops. Rocky banks were "worked up boldly against the masonry of the arches" and planted so that visitors were scarcely aware of the structures. The most rustic of these were Olmsted's random masonry arch that fit tightly into the natural bedrock of the Ramble and the Boulder Bridge formed by massive slabs of rock arranged in a bold, exaggerated manner, as if piled up by some great cataclysmic force.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

These designs, particularly the bridge, used natural materials and blended with the natural setting. In the design of the bridge, Olmsted's naturalism took on exaggerated proportions as the effects of a wild place were not only assimilated but amplified to create highly romantic, picturesque results. These two structures were later illustrated in Samuel Parsons's *Art of Landscape Architecture* (1915) and, like the designs of other features in Central Park, inspired the work of park designers for decades to come. Calvert Vaux designed many of the lesser structures following Downing's suggestions for constructions of unpeeled tree trunks and twisted branches; these included boathouses, foot bridges, shelters, and benches.¹¹

Of Olmsted's parks, Franklin Park in Boston, designed in the 1880s, established the strongest precedent for the design of natural areas. It adapted Downing's ideas about a private pleasure ground to the demands of an urban location, heavy public use, and public management. Envisioned as a "country park" from the start, the park preserved natural wooded areas and picturesque outcrops of Roxbury pudding stone, a local conglomerate. Open meadows were carved out of what had been farms and fields; natural vegetation was retained and enhanced by new plantings, many of which were native to the region; a pond was excavated and planted; overlooks were developed at scenic points; and an expanded repertoire of sturdy park structures and outside furniture was installed to provide for comfort and pleasure. A circuit drive led carriages around the park, up and down natural hills, to stopping places where passengers could climb rustic stone stairways lined with coping boulders to scenic overlooks and picturesque shelters.

The roads in Franklin Park were designed to enable visitors to take in the fresh air and enjoy the kinetic experience of viewing the scenery at a relatively slow speed. Because of the limited speed of horse-drawn carriages, the roads could round many tight curves and ascend steep gradients in order to follow the natural topography. Rockwork was an important unifying feature in the design of Franklin Park. Local stone gathered as old walls were dismantled and former pastures cleared provided construction materials for the buildings, bridges, and other manmade structures in the park and elsewhere in the city's emerging system of parks and parkways. Large, rugged boulders of Roxbury pudding stone were incorporated into the design of many landscape and architectural features. On the open field called the "playstead," Olmsted erected a massive terrace of boulders 600 feet long on which a large two-story Shingle style recreation building was built. The building provided changing rooms for athletes, rest rooms, and, upstairs, a dining room with a large fireplace. A smaller Shingle style shelter in the form of an open-air lookout was built on the summit of Schoolmaster's Hill. The walls of these buildings were constructed of boulders and weathered wooden shingles. The solidity and proportions of their forms conveyed a permanence and sturdiness that was lacking in Downing's constructions of twisted branches. Rockwork provided rustic accents in an overgrown curving stairway of ninety-nine steps and in the edging of overlooks, paths, and roads. A circuit road and system of meandering paths were installed, and grades for strolling and driving were separated by

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

stone bridges and the vine-covered Ellicotdale Arch, a rustic foot tunnel that passed beneath the carriage road. Functional landscape features, such as benches, water fountains, and springs, were characterized by the use of rustic boulders embedded in the soil, laid in courses, or sometimes fashioned into round arches. Water fountains were built from large boulders or slabs of pudding stone, often informally juxtaposed with little or no mortar. Benches were constructed in segments consisting of rough pudding stone piers and horizontal wooden slats forming seats and backrests; segments were fit together to wrap around the curves of the paths they served.

The rockwork at Franklin Park further developed the rustic boulder and split-stone constructions of Central Park. The romantic exaggeration of Central Park's Boulder Bridge gave way to more subdued and less conspicuous forms of rockwork more in keeping with the arch in the Ramble. Overall, the features developed for the park in the 1880s and 1890s shared a strong functionalism and greater unity with other similar parts of the park than occurred at Central Park. For the first time, park furniture and conveniences, including benches, water fountains, springs, and shelters, assumed sturdy permanent forms of native rock material.

Franklin Park set a standard for the design of rustic park structures and explored new uses of rockwork and native vegetation. It provided a model for the arrangement of a country park in relation to existing natural features and transportation needs. In 1917 Henry Hubbard drew extensively from its example in his *Introduction to the Study of Landscape Design*, setting it forth as a model for the development of natural areas in the twentieth century. The Olmsted firm's work at Franklin Park forged a design ethic for natural parks that was adapted by National Park Service designers in the twentieth century and flourished in the development of national and state parks in the 1930s.

Franklin Park reflected two strong aesthetic influences that had affected Olmsted's work in the 1870s and 1880s. First, he began to collaborate with the architect Henry Hobson Richardson, who was the preeminent practitioner of the Shingle style and originator of the Richardsonian Romanesque style with its bold archways of rusticated stone. Second, he began to explore the use of wild plants to achieve effects that were highly picturesque and naturalistic under the influence of William Robinson who published *The Wild Garden or the Naturalization and Natural Grouping of Hardy Exotic Plants* in London in 1872.

Richardson's influence was seen in the design of the two stone bridges at Franklin Park's Scarborough Pond by George F. Shepley, Charles H. Rutan, and Charles A. Coolidge, the successors to Richardson's firm. Here in the setting of a country park, the bridges were constructed of fieldstones carefully placed to appear random, with a simple single arch of voussoir stones cut to size but fit together so that the weathered surfaces were exposed to view. The Scarborough Pond bridges, the large one with a streamlined curving parapet and the other with a stepped parapet, provided models for the designers of natural parks and the larger one was illustrated by Hubbard in his 1917 book. Richardson's influence also appeared in the construction of small features, such as stonemasonry springhouses, water fountains, and benches and wells, and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

larger structures such as the Playstead Shelter, built of shingle and stone, and the overlook of boulder construction on Schoolmaster's Hill. Although the collaboration between Richardson and Olmsted was cut short by Richardson's untimely death, its integration of landscape and architectural concerns continued to appear in the work of the Olmsted firm and in metropolitan park and parkway systems across the country. Above all, Richardson's techniques for using native rock in bold, rusticated arches and masonry walls would be carried on in the development of landscape features such as bridges, tunnels, and shelters.¹²

William Robinson's ideas on introducing the wild species of many nations into the English garden in the form of wild borders, woodland settings, fern gardens, and water gardens in ponds or along streams met with great popularity in England. Small, wild plants such as vines, ground covers, ferns, climbing vines, and water plants could embellish the pleasure ground, adding to the already existing interest in trees and shrubs for their aesthetic character. In 1872, Olmsted advocated a more naturalistic treatment of vegetation in Central Park to avoid a gardenlike appearance and to enhance the park's picturesque qualities. He recommended that shrubbery and trees be thinned, pruned, and blended to avoid uniformity and that vines, such as clematis and honeysuckle, be planted. At Franklin Park, wild grapevines clung to the walls of arches, springs, and water fountains built from rustic boulders and split stone. Low-growing plants flanked the sides of curving stone steps and stairways. Climbing vines, wild ground covers, and perennial plants were planted in the interstices of the massive boulder wall beneath the Playstead Shelter. Vegetation draped the Ellicotdale Arch, the arbor on Schoolmaster's Hill, and the many springs and water fountains. The carriage road and footpaths were lined with mixed displays of shrubbery and low-growing plants. The abutments of the Scarborough Pond bridges were planted in a rich display of shrubbery.¹³

Robinson's ideas were assimilated into American landscape gardening and the Arts and Crafts movement in the 1880s and 1890s. Articles on the embellishment of dwellings with wild vegetation appeared in *Garden and Forest*. These included "How to Mask the Foundations of A Country House" in 1889 and "Architecture and Vines" in 1894. The driving force behind an almost excessive use of vegetation to adorn and to hide architecture was, on the one hand, romantic nostalgia for overgrown ruins and, on the other hand, an aesthetic belief that structures, although necessary, distracted from the scenic beauty of a country or natural place and were to be concealed by natural means wherever possible. His ideas continued to influence landscape design in the twentieth century in the form of wild gardens filling remote and often naturally wooded ravines of estates during the "country place era" from the early 1890s through the 1920s. These gardens included work by Hubbard, James Greenleaf, the Olmsteds, Warren Manning, Ferruccio Vitale, and Beatrix Farrand, practitioners who were also involved with the design of national parks. The practice of using wild plants, shrubs, and trees to conceal construction scars, to blend manmade structures with natural vegetation, and to screen undesirable

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

objects from view would continue into the twentieth century and serve the National Park Service's program of landscape naturalization decades later.

Another important development of the nineteenth-century park movement was the creation of regional park systems that included large reservations and scenic natural features. In 1872, park designer H. W. S. Cleveland called for a system of metropolitan parks for Minneapolis that would include the nearby river bluffs along the Mississippi and the land encompassing the nearby lakes, hills, and valleys as well as suitable park areas within the city limits.¹⁴

Charles W. Eliot, Jr., a Boston landscape architect who had worked in the Olmsted office, was a pioneer in developing a methodology for preserving regional character and outstanding natural features and for developing and managing scenic reservations. Eliot defended the preservation of a stand of virgin trees and presented a plan for conserving scenic areas in an article, "Waverly Oaks," printed in *Garden and Forest* in February 1890. His argument resulted in the formation of the Trustees of Public Reservations in Massachusetts in 1891 and state legislation in 1893 that established the Metropolitan Park System around Boston, the first such system in the country, which included parks of natural scenic character such as Blue Hills and Middlesex Fells. Eliot urged the development of a series of parks connected by natural systems such as rivers and meadows, and advocated clearing vegetation to reveal and maintain scenic vistas that showed the relationship of a park to its larger geographical context.¹⁵

One of Eliot's most important contributions to park design was his insistence on planning before developing a natural park for public use. Eliot called attention to the role of the landscape architect in making available the most characteristic and interesting of existing scenery, of controlling or modifying vegetation to enhance the scenery, and devising the most advantageous routes for roads and paths from which scenery could be viewed. In an article in *Garden and Forest* of August 26, 1896, Eliot asserted that planning with attention to the environment was needed "to make the wildest place accessible or enjoyable." He argued that public reservations of any sort would only be saved from haphazard development by the early adoption of rational and comprehensive plans.¹⁶

Eliot pioneered in the field of landscape forestry, through which reservations could be rehabilitated by following the ecology and natural systems of the region, when he prepared a study entitled *Vegetation and Forest Scenery for the Reservation* for the Boston Metropolitan Park Commission in 1896. Eliot's plan for restoration entailed several steps. First, the present condition of vegetation, including types and variations, was to be recorded on topographical maps. This information was then to be used to define the principal landscape types. In the case of the metropolitan reservations, these types included summits, swamps, areas of sprout-growth called coppices, fields and pastures, bushy pastures, and seedling forests. Each type was to be analyzed according to its character and the proportion to which it covered the overall parkland, and recommendations were to be made for the treatment of each type. Eliot's study concluded that, in the case of the metropolitan

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

reservations, the vegetation resulted from repeated or continuous interference with the natural processes by men, fire, and browsing animals. This finding helped justify a plan of vegetation control and management that, under the skillful guidance of a landscape professional, would slowly add variety, interest, and beauty to the landscape.¹⁷

Eliot's work, immediately recognized as seminal by the profession, had major applications for both national and state park work. First of all, it established a methodology for selecting parks based upon their representative characteristics. It further established a process for planning and managing natural areas, whereby the protection of natural vegetation took preeminence over the development of roads and trails. His approach was particularly useful for park landscapes that had been damaged by previous land uses. Although the first national parks were in the West and were essentially primeval in character, many parks contained former homesteads or Indian camping grounds and thus had been altered by the intervention of man as well as by natural flooding, fires, or blights. Eliot's report also provided a logical process for preserving scenery that was followed by national park designers as early as 1919. From Eliot came a philosophical basis for much of the common landscape work in national and state parks, including clearing for vistas, meadow protection, roadside and lake cleanup, and selective thinning of trees. As more and more areas entered the national park system that had been previously settled, farmed, or mined and as the National Park Service began to transform submarginal land into state parks and recreational areas in the 1930s, Eliot's ideas and the field of "landscape forestry" assumed greater importance. From meadow clearing to fire protection by selective thinning of wooded areas, Eliot's principle that cutting should be based on long-range goals of beauty and scenery enhancement would predominate for many decades. His lessons on managing viewpoints and vistas would have far-reaching applications in the development of park roads and scenic parkways.

The American Style of Naturalistic Landscape Design

In the early twentieth century, several leading landscape architects and writers recognized the emergence of a unique American style of landscape design based on indigenous plant materials and naturalistic principles of design. In part, this style was a manifestation of the "back-to-the-woods" movement and the prevailing progressive thought supporting the conservation of parks and forests. To a certain degree, it reflected the general nostalgia and sense of loss experienced by a nation whose manifest destiny had reached its westernmost limits and which turned inward toward national parks to recapture the experience of "wilderness." The movement for an American style coincided with the strengthening role of stewardship within the landscape profession.

In the early 20th century, the idea of an indigenous style derived from the principles and practices of Downing and Robinson was promoted in the United States by several leading landscape architects and writers. Practitioners of the style endeavored to preserve and enhance natural character and harmonize

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

manmade improvements with the natural setting and topography. This was done by using informal principles of design; preserving existing vegetation, outcroppings, and land forms; developing scenic vistas and viewpoints; constructing rustic shelters of native stone and wood; and planting indigenous species.

The first to advocate the style was Wilhelm Miller, a horticultural writer and editor, who in 1911 published *What England Can Teach Us About Gardening*, a series of writings that had previously appeared in *Garden Magazine* and *Country Life in America*. These were based on his interest in America's native flora and a recent trip to England where he visited William Robinson's home and gardens at Gravetye. Miller advised his readers: "Let every country use chiefly its own native trees, shrubs, vines and other permanent material, and let the style of gardening grow naturally out of necessity, the soil and the new conditions." Miller abandoned Robinson's call for the naturalization of exotic wild plants in favor of using only native species. Miller envisioned a style that synthesized nature and landscape design. He praised the beauty of American land forms and scenery and saw them as features worthy of enhancement by the planting of native materials.¹⁸

Miller extended his interest to a regional style he saw evolving in the Midwest. In 1915 Miller wrote a circular for the University of Illinois's Experiment Station in 1915 called *The Prairie Spirit in Landscape Gardening*. Here, he recognized and, in turn, promoted a style of landscape gardening that drew inspiration from the native landscape of the Midwest, its landform, waterways, and vegetation. This "spirit" could be carried out in both formal and informal gardens and was based on the principles of preserving, restoring or repeating some phase of the Prairie. Miller described the prairie style as an American mode of design based upon the practical needs of the middle-western people and characteristics by preservation of the typical western scenery, by restoration of local color, and by repetition of the horizontal line of land and sky, which is the strongest feature of prairie scenery. Miller attributed the origins of the style to O.C. Simonds, who had worked at Graceland Cemetery in Chicago since 1880 and had transplanted from the wild many of Illinois's common shrubs and trees. To Jens Jensen, Miller credited the original idea for taking the prairie as a "leading motive" in landscape design. Jensen, inspired by the natural beauty of the Midwest, incorporated fields of wild flowers and used natural and naturalistic features such as waterfalls, brooks, streams, and lakes in his work. At Chicago's Humboldt and West Side parks, Jensen elevated the imitation of nature to a fine art for enhancement of public parks and recreation.¹⁹

Jensen pioneered in highway beautification and the roadside planting of native vegetation in the early 1920s, when he designed the "ideal section" of the coast-to-coast Lincoln Highway. Here in a one and one-third mile stretch between Schererville and Dyer, Indiana, Jensen created a landscape that followed the area's natural character. He planted native grasses, flowers and occasional clusters of hawthorne or crabapple where the road passed through the open prairie, and groves of native bur oak where it passed through upland areas

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

and crossed wooded ravines. Jensen viewed his work as a model for the Lincoln Highway and other roads. Jensen urged the highway association to secure a wide right-of-way, 100 to 150 feet to each side of the roadway, especially in developed areas. Jensen's design included a 40-acre camp ground that provided parking areas, a council ring with a campfire, rest rooms, a filling station, and a store.²⁰

Jensen's many contributions to landscape design of public parks were both great and modest. Forging an appreciation of the physical land forms and the native vegetation of the Midwest, he competently and creatively used the region's limestone to create features such as pools and cascades that were then planted diffusely with native vines and flora. He introduced features such as the council ring, which was well adapted for campfire circles in natural parks. His swimming pools and outdoor theaters had naturalistic rather than geometric forms and, therefore, blended gracefully with the surrounding natural or naturalistic topography. Jensen, too, was interested in providing park visitors, especially the youth of Chicago, with a vivid out-of-doors experience and in fostering an appreciation of nature, through assimilated versions of the wilderness. Jensen's rule of a 200-foot right-of-way would be adopted by Illinois's highway department and would be used by the National Park Service in its development of parkways and approach roads. Although never constructed, his campground design with a loop road and crescent-shaped tiers prefigured the design of waysides in national parks and parkways in the 1930s. Jensen was also an active conservationist and the leading member of the Friends of Our Native Landscape, founded in 1913, to gather information and promote legislation to preserve areas of historic and scenic interest.²¹

Miller recognized the emergence of "a new type of rock gardening" practiced by Jensen and others in the Midwest. Rock outcroppings were not a major characteristic of the midwestern landscape as they were in the Northeast. Beds of native limestone, however, were visible in the bluffs along rivers and lakes and in road cuts. The dry, hot summers of Illinois and the scarcity of rocks made the fern rock gardens of the Northeast impossible. This new technique, exemplified by the stratified rockwork of the Prairie River in Humboldt Park, called for embedding quarried stone, called tufa, to create ledge-like formations that could be planted with simple rock-loving plants that grew locally. Wisconsin limestone had become popular for use in stepping stones, ledges, springs, cascades and other forms of naturalistic rockwork. Restoration also included exposing rugged and picturesque ledges introducing dramatic elements otherwise hidden. The Illinois Experiment Station had published a circular on stratified rockwork several years before. To a large degree, the stratified materials echoed the horizontality of the prairie as well as the natural formation of native bedrock.²²

Landscape architects working in the Prairie spirit shared the same appreciation and idealization of the Midwest landscape as the architects of the Prairie Style of architecture, Frank Lloyd Wright, Walter Burley Griffin, Dwight H. Perkins, Marion Mahoney, and Robert Spencer. Jensen was familiar and worked with these designers through his office at Steinway Hall in Chicago and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

through his membership in the Cliff Dwellers. Jensen and Wright collaborated on a number of projects in the early 20th century, including the Avery Coonley House in Riverside. In addition to echoing the horizontal planes of the Prairie landscape in their work through low-lying and overhanging eaves, Prairie School architects respected the contours of the land and let their designs follow the natural topography. In addition, Wright and Griffin, who was trained as a landscape architect, used terraces, pools, walls, and planting boxes to extend their work into the surrounding site. These characteristics would be adopted by practitioners of the Arts and Crafts Movement. Myron Hunt, who also shared offices at Steinway Hall, later moved to Los Angeles where he became involved with estate and institutional designs. In the early 1920s, he was called upon to help plan a new village for Yosemite and design the park's administration building. Hunt was an architect who had a great understanding of the relationship of landscape and architecture and an ability to integrate landscape elements in his work. Through practitioners like Hunt and through publications such as *The Craftsman* and Simond's *Landscape-Gardening* of 1920, the ideas of the Prairie School about the unity of architecture and landscape were diffused to other parts of the country.²³

The Midwest was not the only region of the country to develop a characteristic style of native gardening. In California, a style emerged that used plants native to specific climatic zones within the state. This style was generally called "California gardening" after Eugene O. Murmann, a practitioner who made a business of laying out designs for yards of bungalow homeowners and popularized the style in 1914 through an illustrated book of plans and photographs entitled *California Gardening*. Subtitled "How to Plan and Beautify the City Lot, Suburban Grounds and Country Estate, including 50 Garden Plans and 103 Illustrations of Actual Gardens from Photographs by the Author," Murmann's book was both a portfolio of California gardens and a mail-order catalog from which homeowners could order plans and planting lists according to their tastes and the local conditions. Plans for "natural gardens" dominated Murmann's catalog, drawing heavily from the 19th century English gardening tradition espoused by Downing and Robinson. They incorporated curving paths, rustic stone stairways, curvilinear expanses of lawn bordered by shrubbery and trees, rustic seats and shelters, and naturalistic rock walls. Although California gardens used many exotic plants, native species were commonly preferred because they were well suited to the local climate and soil conditions. Murmann also featured the landscape work of Greene and Greene, especially that inspired by Japanese landscape traditions. Several views featured the six-acre grounds of the Robert R. Blacker house in Pasadena, where a meandering stone-edged pool and rock garden graced the foot of the sloping knoll where the house was situated. Curving paths led from the house to the garden. The Japanese landscape style, commonly practiced in California in the early 20th century, featured miniaturized gardens with tightly curving walks, small ponds and streams edged with irregular borders of boulders and cobbles, miniature hills called "hillocks," stepping stones, and rockwork in the form of stairways, walls, and water fountains.²⁴

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

A distinctive movement was also emerging for arid and semi-arid gardens using desert plants and local sand and stones. Murmann depicted scenes in urban parks, estate grounds, and residential yards where yucca, agave, and cactus were displayed on rocky banks along curving rock-edged drives and paths. Drives were also lined with irregular meandering walls of boulders and rocks embedded gently into the dry soil. There were masses of junipers and other evergreens capable of growing in semi-arid conditions. The desert gardens, too, had rustic pergolas and garden seats often constructed of juniper trunks. Dry-laid boulder walls and meandering paths studded with boulders and rustic stone stairways provided rich accents to perennial, alpine, and even desert displays of plants.²⁵

Today Murmann's book is a revealing index of the common landscape designs intended for the yards of California homes. It also indicates the adaptation of Downing and Robinson's principles to different climatic conditions and the combination of these principles with the compatible influence of Japanese landscape gardening. Vint, Hull, Maier, and other National Park Service designers were familiar with this style if not Murmann's book. The designs fulfilled the tenets of the Arts and Crafts Movement because they drew heavily upon native materials and unity of structures and natural setting. California gardens, many of the earliest of which were at the arboretum at the University of California at Berkeley, provided ready models for grading and planting the grounds of park buildings and for developing interpretive wild gardens in national parks and monuments, particularly in the southwest.

Gustav Stickley through *The Craftsman* promoted these ideas and was perhaps one of the strongest influences of the general acceptance of the natural style of gardening in the early 20th century. Stickley advocated a philosophy of harmony between home and nature that called for the siting of buildings in relationship to nature. Homes were to be built so that they became a part of the natural surroundings and harmonized with the general contour of the site and the surrounding country. This was achieved by designing the building to fit the existing terrain and by using local material and natural colors to bring the house into the closest relationship with its natural surroundings. Articles such as "The Natural Garden: Some Things That Can Be Done When Nature is Followed Instead of Thwarted" (1909) urged gardeners to follow nature in laying out curving stairways, planting climbing vines, and thatching the roofs of shelters and porches. Such advice reflected the English landscape gardening practices that Downing had introduced and Englishman William Robinson had espoused. This style called for exuberant displays of wild grape vines and other foliage and the use of native trees and shrubbery, often in combination with rockwork, bodies of water, and stonemasonry construction. These landscape effects were well-suited to the concept of harmony projected by the Arts and Crafts Movement in America. They added to the picturesque quality of the bungalow home and enabled designers to merge indoor and outdoor elements and were readily adapted by the designers of state and national parks.²⁶

Two publications on the theory of landscape gardening appeared in 1917 that strongly promulgated an American style of natural gardening based on indigenous

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

materials and would have far-reaching influence on the landscape architecture of national and state parks. These were *An Introduction to the Study of Landscape Design* by Henry Hubbard and Theodora Kimball, which was the major textbook in schools of landscape architecture until the 1950s, and the lesser-known *The Natural Style of Landscape Gardening* by Frank A. Waugh. It is no coincidence that both of these advocated a study of nature as the basis for informal or naturalistic landscape gardening and upheld the stewardship of landscape architects for natural areas of various types including country parks, county and state parks, national forests, and national parks.

Hubbard, a professor in Harvard's school of landscape architecture, had an extensive role in perpetuating the principles and practices of naturalistic landscape design in the 20th century. Primarily through his *Introduction*, which was published in 1917, revised in 1928, and printed in many editions, Hubbard influenced several generations of students of landscape architecture. His text was comprehensive in its treatment of composition and description of numerous design features. It included a comprehensive bibliography of both American and European writings on landscape design. Hubbard was an experienced and versatile practitioner of both informal and formal landscape styles.

Hubbard's book was a compilation of the professional practice of landscape architecture as it had evolved in America from Downing and others and had assimilated English gardening style, Italian influences, and other trends, European and Eastern. For Hubbard, the design elements of texture, color, line, balance, and form, and the basic principles of composition could be applied to landscape design for artistic and functional purposes. He translated Downing's concepts into practical approaches and techniques that the twentieth century designer could follow. Hubbard focused on landscape composition and principles of design and gave detailed instructions on creating landscapes in both formal and informal styles.

Techniques for informal landscapes included the natural coloration of park structures, use of native stone in rustic steps and bridges, varying the contours of parapets to avoid monotony, construction of cobblestone gutters for drainage, the creation of park shelters that repeated the verticality and branching of surrounding trees of the forest, curving paths rising to scenic overlooks, the use of plantings to integrate buildings and ground. Hubbard explored the development of vistas through devices such as screening and enframing and the construction of terraces, paths, and roads.

The publication of the book, one year after Congress had established the National Park Service, was propitious. Many of Hubbard's ideas would be translated directly into the National Park Service's principles for park design. Hubbard, one of the profession's strongest advocates for the creation of the National Park Service, had recently visited Yosemite and used his photographs, experiences, and observations of the park extensively in his text. An inspiration of nature led him to an appreciation of national park scenery as an object for the study of landscape character as well as conservation.

Hubbard heralded the emergence of a unique American version of the English landscape gardening style which he called the Modern American Landscape style.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Distinctive was the appreciation and interest that American designers had in preserving and interpreting natural character. Focused on assimilating natural features and using native vegetation, American designers forged an informal style suitable for natural settings, whether a private home, residential subdivision, or country park. Hubbard defined the style:

The choice of indigenous plant materials, the study of the arrangement of this material in accordance with its own character and of that in the landscape in which it appeared, is therefore an important consideration in this American style. The landscape characters, however, the "natural" landscape scenes, which this style usually seized upon to enhance and reproduce, are seldom the unhampered work of nature; more usually they are the scenes of pasture and woodlot, shrub-grown wall, and elm-dotted river bottom, which are partly the results of man's activity in the less intensively used farm lands.²⁷

Hubbard linked the landscape architects' inspiration from nature with their civic obligation of stewardship. He sought to give credibility to informal and naturalistic landscape design as a high artistic form, which, although simple in appearance was a complex and exacting endeavor. In Hubbard's opinion, the designer's challenge was to arrange natural materials in such a way that they not only expressed the natural character of the landscape, but also produced harmony of form, color, texture, repetition, sequence, and balance. Designs were to be both interpretations of natural character and effective pictorial compositions.²⁸

The original source of this style Hubbard attributed to the work of the Olmsted firm at Franklin Park. His text included five illustrations of the park, depicting the circuit drive, the bridge over Scarborough Pond, the tennis courts at Ellicotdale, steps in a "naturalistic setting," and the Playstead overlook and shelter. Franklin Park with its spaces, vistas, circuit drive, shelters, and facilities became fixed in the minds of students and practitioners of landscape architecture in the 1920s and 1930s. Through Hubbard's book, Franklin Park became the prototype for the development of natural areas, and the Scarborough Bridge, the Playstead Shelter, boulder-lined roads and paths, and meandering paths with rustic steps leading to scenic overlooks became models for rustic park structures and landscape features. The lessons of Franklin Park were applied to state and national parks and forests, as well as country parks and metropolitan reservations through the 1930s.²⁹

Hubbard set the stage for the flowering of a naturalistic American style, the greatest practitioners of which would be the designers of national and state parks. Hubbard's text abounded with useful advice to the 20th-century park designer. Some of his most important lessons related to the development of vistas and the use of vegetation for screening and enframement. These devices were central to Downing's principles and would become fundamental in the landscape architectural program of the National Park Service. These devices enabled designers to control their designs and even enhance natural

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

beauty by screening out of incongruous elements and by enhancing desirable scenic elements.³⁰

Expanding on Downing's advice, Hubbard enjoined landscape designers to use native rock, vegetation, and functional structures as elements of harmonious design. He drew the reader's attention to the size, coloration, texture, and natural arrangement of rocks and the growth of lichens and mosses upon them. If rockwork was to simulate the work of nature, it had to be organized the same way that rocks in nature were, that is, related to one another as though forming a sea beach, talus slope, outcropping, ledge, or other natural rock formation. Designers were to carefully study the character of existing natural rock and understand the ways rock outcroppings had been formed and exposed by natural forces.³¹

The color and texture of rockwork was a valuable quality that normally gave strength and solidity to manmade rockwork without making it conspicuous. Hubbard urged designers to use weathered or moss and lichened rocks and ledges to give an appearance of age. He discouraged the use of light colored rocks dug from the ground because they appeared barren and had not been exposed to the weather. Rocks were to be placed in conditions of sunlight or shade and dampness similar to those of the location where they were collected, so that mosses and lichens could continue to grow. Noting their deep fissures often filled with moist loam suitable for rock-loving plants, Hubbard, as Downing, saw natural outcroppings and rock formations as ideal places to encourage rock gardens. Artificial rockwork was to be planted in similar ways to create the textures and character of natural outcrops or groups of boulders.³²

Hubbard encouraged designers to use local stone in the construction of steps, parapets, terraces, shelters, and walks. Local material yielded harmonies of color, as well as texture, between the stonework and any natural ledges nearby. Recognizing that manmade structures were bound to be conspicuous, Hubbard challenged designers to incorporate them into harmonious compositions that blended with nature. He told readers that stones irregular in form and color would readily gather moss and lichens and blend into natural settings. Stone walls gained texture and interest and could even be concealed when covered with vines hanging from above or closely climbing the walls from below. Hubbard, as others, suggested creating pockets among the stones that could be filled with loam, planted and watered. The results could relieve the harshness of form, change the texture of the construction, provide a panel of green, and conceal the architectural character beneath.³³

Shelters required special treatment. Hubbard suggested roofs of thatch, supporting posts made from rough and knotted logs, and mantles of vines to blend shelters into the natural setting of a wild place. Hubbard illustrated a circular pavilion with a thatched roof not unlike Downing's in form and function. Hubbard, however, replaced Downing's lattice of intertwined and bark-covered trunks with evenly spaced sturdy timber posts that had a somewhat knotted and irregular appearance. The posts branched to create braces for the roof, imitating the natural branching of a woodland tree. So effective was Hubbard's treatment of the shelter with its imitation of the natural branching

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

of tree limbs, its thatched roofing, and fulfillment of the functional needs of the design, that the design would become an identifiable prototype for the construction of park shelters and lookouts. Its influence is most directly observed in the circular and octagonal designs of picnic shelters in Iowa state parks illustrated in *Park and Recreation Structures*. The basic materials, method of construction, and branch-like braces have been adapted in parks across the country. Like Stickley, Hubbard perpetuated the use of thatching for roofing materials. Regional equivalents were found for the grasses commonly used for thatching, many drawn from the building materials of indigenous cultures or early settlers. Juniper bark strips were woven into the roofs of shelters along Bright Angel Trail. Palmetto leaves created the heavy thatched roof of the refectory at Palmetto State Park in Texas. And elsewhere in the Southwest "latias" were gathered from the edge of rivers and tied into place for ceilings and roofing.³⁴

As an ideal for larger park structures, Hubbard presented the large multi-purpose Playstead Shelter at Franklin Park, which was built of native materials and designed to fit harmoniously into a natural site and setting. Although the shelter was built upon a massive 600-foot boulder terrace overlooking the playing fields, the terrace was not visible from the circuit drive. From this point of view, the building appeared to spring out of the natural rock outcrop, its weathered materials of stone and shingle blending with the natural rock and trees. The pitch of the hipped roof was flattened and given an undulating surface; it had broad overhanging eaves and was interrupted by a wide intersecting front gable. The design of hipped roofs enabled designers to "tuck in" the ends of a roof and eliminate the right angles that earmarked artificial construction. The roof overhung the shingled walls and was pierced by a large chimney of local stone. The ribbon of windows characteristic of the Shingle Style extended across the gable illuminating the upper-story interior.³⁵

Although Hubbard discouraged the construction of buildings in a park, he admitted they were often necessary. Small buildings, such as comfort stations, were best located where they could be concealed with little difficulty and where signs could direct visitors to them. Large buildings, however, were to be set and enframed so that they were inconspicuous and "by choice of material" harmonious with the landscape." The goal in design was to create a scene having "the effect that the building is related harmoniously to a landscape which as a whole expresses its own natural character." Hubbard suggested that such buildings take on an irregular shape or be fitted closely to the irregularities of the land. Buildings could be subordinated to the landscape through harmonization of texture and color. Stone from local quarries could be used to match the nearby outcrops. Thatch roofing or lichen-covered walls could echo the character of nearby trees or grasses. Hubbard too suggested using "mantling" vines and overhanging foliage to screen manmade walls. Hubbard felt it unnecessary to go to the extreme of actually imitating natural forms in the shape of roof lines or other features.³⁶

Hubbard also suggested designers create a transition between a building and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

its natural setting by constructing terraces, ramps, steps, and stairs. These effectively connected the two areas and could be combined with intermediary trees, shrubs, and vines to further blend them together. By the late 19th century such transitional features as terraces were increasingly becoming a standard part of the vocabulary of both architects and landscape architects, particularly in the styles influenced by the Shingle Style of the 1870s--Prairie, Adirondack, the West Coast work of Greene and Greene and Bernard Maybeck, and those generally categorized as Craftsman and Bungalow. The Shingle Style with its use of native wood and stone and its weathering character that over time enhanced the building's ability to blend into natural surroundings provided the ideal medium for park construction, particularly when enhanced by naturalistic landscape features constructed of the same native materials. In 1917, the Overlook Shelter was already 30 years of age. Yet Hubbard's interest in it gave it a timeless quality, demonstrating that architectural fashion mattered little when nature was to remain the dominant feature of a naturalistic landscape.³⁷

Hubbard's lessons strongly influenced National Park Service designers. His textbook was probably the single most influential source that inspired the park designers of the 1920s and 30s. His lessons were varied covering informal and naturalistic landscape design and also promoting the Shingle Style as the style best suited for buildings and other structures in natural areas. He explained the basic principles of vista, enframing, and screening, and gave instructions on using rockwork and planting to conceal manmade construction. Numerous techniques, from using cobblestones in drains and ditches alongside park roads to varying the line of a parapet by introducing crenulations to relieve monotony, were incorporated into the work of National Park Service designers in the 1920s and continued to be applied in new and creative ways in state and national parks in the 1930s.

In *The Natural Style of Landscape Gardening* of 1917, Frank Waugh, a professor of landscape gardening at Massachusetts Agricultural College, promoted a similar style based on an imitation of natural forms and the use of native vegetation. Born and educated in the Midwest, Waugh had close ties with Wilhelm Miller, Jens Jensen, and other advocates of the Prairie spirit in landscape gardening. Waugh knew Miller and Jensen personally and referred to Miller's writing and Jensen's work in his book on the natural style. Although Waugh was strongly influenced by their ideas, his own work and teaching followed a very different course. Waugh became increasingly interested in the challenge of making parks and forests accessible to the public. At the same time he pursued developments in the emerging field of ecology. He advocated an approach where the finest of natural features and scenic beauty was to be preserved, interpreted, shaped, and presented to enhance the visitor's enjoyment.³⁸

Waugh called his approach the Natural style to distinguish it from Andrew Jackson Downing and Humphry Repton's naturalistic style which imitated nature's forms but not its vegetation. To Waugh, the Natural style endeavored "to present its pictures in forms typical of the natural landscape and made vital

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

by the landscape spirit." By landscape spirit, Waugh meant the informal order and feeling of vegetation and landscape features found in nature. He advocated a close study of nature for practitioners and adherence to the principles of composition followed by nature. He pointed out the suitability of the Natural style for work in national parks and forests, and acknowledged the vital role landscape designers were to play in developing these areas.³⁹

Waugh's unique contribution to American literature was his introduction of an ecological approach to landscape gardening--an approach that called for the planting of trees, shrubs, and ground covers in accordance with their natural association in nature and according to natural conditions of soil and moisture. This was especially true of mass plantings. Waugh credited Willy Lange's German work, *Die Garten-Gestaltung de Neuzit*, with the best explanation of this ecological principle. He also recognized the work done by Dr. Engler and Dr. Peters, the curator and planting foreman at the botanical garden in Berlin, who apparently were the first to plant large masses of trees and shrubs in strict reference to soil and drainage conditions.⁴⁰

Ecology was just gaining recognition as a science in the early 20th century and led to the general understanding that very few species of plants existed in nature alone. Waugh urged his readers to plant and preserve plants in the same groupings and under the same conditions that would be found in nature. He encouraged designers to use native plants as nature used them and base selections and groupings on the same fundamental laws that governed the wild and native landscape.⁴¹

Mass planting was a comparatively recent innovation in landscape gardening in 1917. Waugh believed it marked one of the greatest advances in the evolution of a genuinely naturalistic style. It included planting trees by the thousands for screens or backgrounds, the introduction of rhododendrons "by carloads" for underplanting, and the development of considerable forest tracts as elements of scenic beauty. Mass plantings were of two kinds: pure masses, which were composed of a single species or variety, and mixed masses, which contained several different ones. Mass plantings were composed of social groups, which included trees, shrubs, and ground covers that grew naturally together under the same conditions of soil, moisture, and climate. The art of grouping trees, shrubs, and other plants was fundamental to the natural style. Waugh identified seven patterns for grouping and cited several simple rules for grouping five or more trees. The law of simplicity cautioned against using too many species, the law of dominance called for one species to dominate the group. The law of harmony required that species harmonize in color, form, and habit of growth. The law of ecology required that plants "be socially compatible," and the law of adaptation meant that all plants were to be adapted to the local conditions such as soil, drainage, and light.⁴²

In Waugh's opinion, every scenic feature, whether a natural pond, cliff, outcrop of rock, glacier-placed boulder, or old plantation of pine or oak, was to be "seized upon and developed with skill and imagination." Brooks and streams presented unlimited possibilities for development with trails, foot bridges, stepping stones, and seats in shady nooks arranged to immerse the

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

visitor in the scene. The sequence of scenes and views was particularly important in Waugh's opinion. On the design of roads or trails, Waugh said that at each climax of view the byway should turn and proceed upward to the next climax. Waugh called these places "paragraphic" points and described the ways in which a series of scenes could be unravelled through the careful location of trails, roads, and overlooks. Attention was to be drawn to special views by placing "at the optimum point of observation" a seat, carriage turn, or rest house so that the stranger was "directed unmistakably to the main feature, the desirable vista or the glorious outlook." Waugh, like Hubbard, recognized the value of vistas in developing natural areas for public use and enjoyment. Waugh advanced Downing's principles on vista through his work on roads and recreational areas in national forests. He believed that the landscape designer should utilize to the utmost all the natural scenery and develop every good view within or without the park. Developing views required that the line of the best view be determined and kept open; the view be framed by suitable plantings; and inferior views be blocked out or deemphasized.⁴³

Waugh recognized the value of natural areas for recreational activities and felt that structures for golf, skating, bathing, boating, and fishing belonged in the informal landscape. On shelters compatible with the natural style, he wrote: "Instead of the pergola and the classical 'temple' or 'gazebo' or 'music house,' there may be an 'arbor,' the 'summerhouse,' the 'log cabin,' the boat house or the fishing lodge." Waugh agreed with Downing that shelters and seating be provided throughout, especially where good views could be enjoyed. He disagreed, however, on the form these were to take, saying that outmoded constructions of woven, twisted, and entwined saplings be replaced by constructions of roughsawn or hewn planks that had been stained or weathered.⁴⁴

While Henry Hubbard gave the park designer the practical tools for identifying landscape characteristics and the design principles for achieving an informal or natural style of landscape, Waugh laid a philosophical and practical basis for landscape naturalization, particularly the creation of mass plantings along ponds, roads, streams, and at the edge of forests that followed the natural patterns of growth and plant associations. Both men continued to be involved in the issues of developing natural areas for public use and enjoyment during the next twenty-five years. Both would substantially influence the landscape practices of national and state park designers.

In 1917 Waugh began consulting on the recreational development of national forests, writing for the United States Forest Service in 1917 two reports, *The Recreational Uses of National Forests* and *A Plan for Grand Canyon Village*. Waugh brought together the concerns for developing natural scenic areas through subsequent work in Bryce Canyon, Kings Canyon, and Mount Hood national forests. It was no surprise that Conrad Wirth, the assistant director of the National Park Service during the New Deal era and Waugh's former student, called upon Waugh to author a handbook, *Landscape Conservation*, for Emergency Conservation Work in state parks; this was published first in 1935 and several years later in the Civilian Conservation Corps's Project Training series. He applied his style of natural gardening to the work of recreational development in national

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

forests and later state parks. He wrote extensively on a variety of subjects, including outdoor theaters, roadside ecology, and the recreational uses of national forest lands. In addition to Conrad Wirth, Philip Elwood and Albert Taylor were among his students at Massachusetts Agricultural College whose careers would in some way impact national and state park design.

Several other books appeared in the early 20th century providing practical advice for naturalistic design in natural areas. In 1915, Samuel Parsons, Jr., published principles of naturalistic gardening, including descriptive details of designs from Central Park such as the arch and cave in the Ramble and the Boulder Bridge, in *The Art of Landscape Architecture*. In 1920, O.C. Simonds published *Landscape Gardening* as part of a rural science series directed at farmers, civil engineers, and others outside the landscape profession, which instructed readers on the use of native vegetation to add interest to roadsides, margins of woodland streams, artificial lakes, and gardens. The first American edition of Humphry Repton's principles for landscape gardening was published with an introduction by John Nolen in 1907. In 1917, Parson's editing of an English translation of Prince Pückler-Muskau's 1834 treatise was published. A number of works by William Robinson and Gertrude Jekyll, celebrating the use of native plants in the garden, were published in America in the first decade of the 20th century. Waugh published a revised edition of Downing's *Theory and Practice* in 1921. In 1928, Edith Roberts and Elsa Rehman published *American Plants for American Gardens*, which further applied the ecological principle to gardening with native plants.

While the appreciation for native plants was growing within the horticultural and landscape architectural circles, scientific literature on ecology and horticulture was also emerging. Henry C. Cowles of the University of Chicago and a member of the Friends of the Native Landscape had published his studies of the plant ecology of the Indiana dunes on Lake Michigan. Frederic E. Clements of the Carnegie Institution in Washington, D.C., conducted research from his laboratories in the Rocky Mountains and southern California and between 1916 and 1930 published a series of works entitled plant succession, plant indicators, and plant competition, which would have important applications in the development of the national parks. Willis Linn Jepson's *Manual of the Flowering Plants of California*, first published in 1925, and the faculty of the University of California, Berkeley, would directly influence the pioneering educational programs of the National Park Service, which got underway in Yosemite National Park in the 1920s.

Also influential on park design was the publication in 1928 of a volume of the senior Olmsted's writings on Central Park. Editors Frederick Law Olmsted, Jr., and Theodora Kimball Hubbard intended the volume, which was entitled *Forty Years of Landscape Architecture: Central Park*, to be a history and case study of an urban park over several decades. It made available to large audiences information about Olmsted's philosophy and practices of park design. Olmsted's letters and reports covered a large number of subjects relating to the design and management of a public park, some of which applied to reservations of natural landscape as well. Subjects included choice and care of plantations,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

boundaries and entrances, public use and abuse, park buildings, and various encroachments.

Technical instructions and plans for the construction of many landscape features, including well-drained earthen paths, dry-laid walls and ha-has, swimming pools, and amphitheaters, that would influence the development of national and state park appeared in the *American Society of Landscape Architects's* journal, in the 1920s and early 1930s. Many of these were written by Cleveland landscape architect Albert Taylor (a former student of Waugh's) and directly applied to design problems common to natural areas. Articles in *Landscape Architecture* by Stephen Hamblin and Frank Waugh drew attention to native plants and their use in the design of roadsides and gardens and on the shores of lakes and ponds.

The greatest practitioners of the American style of natural gardening were the designers of national and state parks in the 1920s and 1930s. These designers, commonly called landscape engineers or landscape architects, readily and confidently drew inspiration from a variety of sources, borrowing both principles and practices that were in keeping with their desire to harmonize and naturalize their construction work and preserve or enhance the inherent scenic beauty of each park. Their work was part of a continuing tradition that began in 19th-century urban parks and matured and flourished in the 1930s. Developments in the 20th century that called for the planting of native plants and trees according to their natural associations and conditions for moisture and drainage opened up new opportunities for park designers. Results included the naturalistic planting of roadsides and the shores of artificial lakes and ponds, the channelization and beautification of streams, and the return of development sites to nature after construction. New demands for public recreation, an increasingly mobile society, and the challenges of managing public lands called for the application of these principles and practices to new uses and at greater scales than they had ever been intended. Designers of national and state parks responded with vigor and creative genius and, in the process, forged a coherent and advanced form of naturalistic landscape design.

Sources of Rustic Architectural Design

In the late nineteenth century, the design of rustic architecture evolved from Downing's fanciful shelters and seats wrought from twisted roots and saplings to sturdy timber and stone structures in urban parks. This evolution was spurred by the development of several architectural styles that endeavored to achieve a harmony between manmade structures and natural setting. These styles emerged in the domestic and resort architecture of rugged and scenic places such as the coast of Maine, the Adirondacks of New York, the San Francisco Bay Area, and the Sierra Madre of California. As the idea of developing wilderness for personal pleasure extended to an increasing number of public parks--local, metropolitan, state, and national--the rustic style was adopted for a multitude of park structures. By the turn of the century, the various expressions were embraced by the American Arts and Crafts movement,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

where they fused with regional styles, indigenous forms, and Japanese influences in both architectural design and gardening styles based on native materials.

The Shingle Style of architecture, which originated in the northeastern United States in the 1870s, had enduring expression in the architecture of parks and resort areas well into the twentieth century. Certain characteristics of the style were well suited to buildings and smaller structures that were required to fit the often rugged topography of natural parks and to blend harmoniously with a natural setting. The style offered a flexible system for massing a building according to interior function and space and the physical and scenic aspects of the site. The addition of porches, porte cochères, viewing bays, towers, and terraces further allowed the framing of views and vistas from several vantage points and integrated the interior space and exterior setting. Construction materials of weathered local stone and timber further joined the building with its site and setting. The style featured massive interior fireplaces and capped chimneys that often pierced flat, low-pitched, and overhanging roofs. Rich wood paneling and crafted details adorned interiors. These characteristics would suit the functional, recreational, and aesthetic purposes of resort architecture. The style was especially suited to homes by the sea, on lakes, and in wooded enclaves such as Llewelyn Park in New Jersey and Tuxedo Park in New York. Most influential was the work of Henry Hobson Richardson, particularly his work for the Ames family in North Easton, Massachusetts. The style reached its zenith in Kraggsyde in Manchester-by-the-Sea, Massachusetts, by Robert S. Peabody and John G. Stearns. Other practitioners included William Ralph Emerson, John Calvin Stevens, Hugo Lamb and Charles A. Rich, Arthur Little, and Charles F. McKim, William R. Mead, and Stanford White.⁴⁵

Many features of the Shingle style were incorporated in park buildings beginning in the 1880s and formed the vocabulary for structures in national and state parks in the 1920s and 1930s. These include an irregular massing of interlocking units on various levels, towers, gable-ended projections, octagons, overhanging roofs, projecting gables, flowing interior space, use of shingles for siding and roofing, entrance porches, porte cochères, high chimneys, horizontal window bands in the gables, open interior spaces, battered foundations of stone that often merged with great stone chimneys and battered porch piers, and broad, open verandas to serve as out-of-door rooms. In addition to the integration of varied levels to suit the existing topography, the most commonly borrowed feature was a rusticated and often battered stone wall that extended from the ground into the lower story, uniting the building and its natural site.

The Shingle and Richardsonian Romanesque styles influenced the designers of the national and state parks through several channels. Foremost of these was the rustic stone and shingle structures of nineteenth-century parks such as Franklin Park. In his *Introduction to the Study of Landscape Design* (1917), Henry Hubbard recognized the suitability of the Shingle style for structures in natural parks and popularized the Olmsted firm's work at Franklin Park,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

influenced by Richardson, as a model for park design decades after the style had fallen out of fashion elsewhere. The Shingle style also fulfilled the basic principles of naturalistic gardening--the use of native materials, a design that fit the topography and blended with natural aspects of the setting, and the use of vegetation to blend and harmonize manmade construction. By the turn of the century, architects in the Adirondacks, the Midwest, and the West had already incorporated many characteristics of the style in their work. By 1910, these ideas were acclaimed by practitioners and promoters of the Arts and Crafts movement in America and had been absorbed into mainstream residential design as part of the "bungalow" craze.

The great camps of New York's Adirondack region provided one of the earliest and strongest expressions of Downing's ideas for a picturesque rustic style appropriate for a natural area or wilderness. The camps were frequently lakeside resorts consisting of several buildings separated by function. The camps were sited to fit the natural contours of the land, to take advantage of the scenic views of the surrounding lakes, mountains, and woodlands, and to offer outdoor activities such as fishing and boating. As it evolved in the late nineteenth century, the Adirondack style adopted features of the Shingle style, the local vernacular of pioneer log cabins, and the romantic European styles of country homes, especially the chalet form of the Swiss Alps and the German farmhouse with jerkinhead gables. These European styles had been popularized in America by Downing in his *Architecture of Country Houses* of 1850 and by Calvert Vaux in *Villas and Cottages* of 1857. The resulting fusion of pattern-book sources and pioneer traditions was compatible with Downing's principles for picturesque and rustic forms that used natural materials in naturalistic forms.

The Adirondack camps, with their cabins, boat houses, and lodges, drew heavily on Downing's suggestions for rustic and picturesque constructions of twisted unpeeled trunks and branches. Their architectural forms and functional designs, however, were derived from the pioneer building traditions of a region with a severe climate and an abundant local supply of logs and boulders. The Adirondack region had heavy snowfalls in winter and extended periods of rain in the spring and summer. Log structures were therefore set upon foundations of stone built up around the first story and battered to shed rain and snow. Oversized timbers were used to support roofs that could hold heavy loads of snow. Overhanging roofs prevented ice and snow from building up against the walls and foundations. Logs were tightly joined and chinked to keep out driving rain and cold wind. Builders raised all log and timber elements off the ground onto stones to reduce interior dampness and prevent the rotting of timbers by rising dampness. The notching of logs at the corners of buildings strengthened the walls, and roof trusses and beams were exposed. Fear of fire led builders to construct tall chimneys that rose high above the roof ridge. Capping around the tops trapped sparks. Fireplaces were built of cyclopean rocks and capped by massive stone slabs for mantles. Fireplaces needed to be sturdy and safe and draw well. This type of fireplace, a signature of the Adirondack lodge, would be incorporated in the lodges of national park

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

concessionaires, from the Bear Mountain and Shenandoah lodges of the East to the Old Faithful and Glacier hotels of the West.⁴⁶

Published in 1889, *Log Cabins: How to Build and Furnish Them* by William S. Wicks was likely the first published guide to siting, constructing, and furnishing log cabins for recreational purposes in keeping with the Adirondack tradition. Wicks told his readers to select sites based on scenic views, accessibility, frontage on the water, and protection by trees. He was one of the first to promote the idea that structures should be an outgrowth of the site and harmonize with it.⁴⁷

Although influenced by pioneer traditions, the Adirondack style adopted characteristics of European design, especially that of Switzerland and Scandinavia, which Downing had strongly recommended as appropriate for American homes in a rural setting. The influence of Swiss architecture dominated in the Adirondack camps, mainly because it was widely used by entrepreneur William West Durant in his four camps--Pine Knot, Uncas, Sagamore, and Kill Kare. Swiss-influenced characteristics included the chalet form of a compact two-story building with a gabled front, broad overhanging roofs, a projecting second-story balcony extending across the gable with railings of roughly sawn boards with simple cut-out designs, and horizontal ribbons of small-paned windows. The Swiss style adopted by Durant suited the practical conditions and needs of the Adirondacks and capitalized on the romantic appeal of a remote northern retreat. So popular was the Swiss imagery that William S. B. Dana published *The Swiss Chalet Book* in 1913. In the first three decades of the twentieth century, the designers of national park lodges at Glacier, Bryce, Zion, Grand Canyon, and Yellowstone national parks continued to be influenced by the romantic mountain imagery of Swiss architecture. Swiss-inspired details remained a part of the park designer's vocabulary long after the recognizable chalet form itself was abandoned.⁴⁸

The characteristics of the Adirondacks style found their way to national parks through popular appeal and contemporary journals and magazines, including *American Architect and Building News*, *House and Garden*, and *The Craftsman*. Designs and ideas were also published in many popular bungalow pattern books such as William Comstock's *Bungalows, Camps and Mountain Houses*, that appeared in the first two decades of the twentieth century. In 1931, an illustrated manual on Adirondack architecture was published that included numerous plans, details, and photographs. Entitled *Camps in the Woods* and written by Augustus D. Shepard, an architect of the Read Camp and a number of other Adirondack buildings, it was a compendium of the lodges, boat houses, and camps the author had designed at the Adirondack League Club--a private reserve of one hundred thousand acres within the Adirondacks. Shepard's book reveals how the Adirondack style evolved in the twentieth century, accommodating new ideas arising from the Prairie style of architecture, the American Arts and Crafts movement, and other sources. No longer primitive rustic cabins of the 1880s, the twentieth-century camps were "summer homes in the woods." Built of the best materials, they were "permanent, liveable, comfortable" and provided every modern convenience. They could be constructed and equipped for year-round use

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

by building a cellar with a heating plant and by installing weatherproofed water and sewage systems.

Upholding the idea that camps should be designed in a style "inspired by the woods," Shepard stated that "the buildings must be designed so that they actually appear to grow out of the ground; they must take their place in the woods as a part of the woods. It should be hardly discernable to the eye where the building commences." This could be accomplished by using stone posts and walls, stone and earth terraces, and hand-hewn wood steps, as nineteenth-century and Arts and Crafts-era landscape architects had recommended. Unlike his nineteenth-century predecessors, however, who fit their buildings somewhat awkwardly onto the existing terrain, Shepard fit his lodges more closely into their natural sites and settings. The cutting of natural slopes and back filling made it possible to fit a building tightly into its natural site and to eliminate unsightly voids under porches or boardwalks. Terraces, walls, and curving stairways further integrated the buildings and sites and created viewpoints where scenery could be enjoyed. Shepard's lodges were improved by flagstone walks and stepping stones, foundation plantings of ferns, and native stone walls. Many of these features followed the advances made by Prairie style and West Coast architects in the first two decades of the twentieth century. Similar techniques were being used in the design of park buildings in the late 1920s. Planting vegetation, such as native ferns and Virginia creeper, was a way to further erase the lines between natural setting and manmade construction.⁴⁹

National park designers drew heavily on the Adirondack tradition, adopting the following characteristics: the use of native logs and rock in a rustic unfinished form, naturalistic siting of structures, incorporation of porches and viewing platforms, the climatic adaptation of using native stone for the foundation and lower story and native timber above, stone chimneys with massive fireplaces and mantles, open interiors with ceilings of exposed rafters and trusses, and a multitude of windows. These characteristics perfectly suited the need to attract visitors to the parks and to harmonize amenities with natural setting. The characteristics of the Adirondack style first found their way into the national parks through the hotels, lodges, and camps of public operators and concessionaires. Glacier, Grand Canyon, Yellowstone, and Yosemite national parks all boasted accommodations in the finest rustic style by 1920. Published sources and examples from the Adirondacks and those inspired by the Adirondack style continued to be valuable sources for national and state park designers through the 1930s.

The Prairie style of architecture emerged at the beginning of the twentieth century ~~emerged the Prairie style of architecture~~, making radical advances in the construction of houses and similar buildings. Prairie style architects built upon the tenets of the Shingle style and applied a design process in which structure followed function and conformed to the contours of a site. They perfected and simplified residential design by using the conventions of landscape architecture, including stairways, terraces, walls, patios, and mantles of vines, to unify site and structure and to integrate indoor and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

outdoor spaces. Prairie style architects also explored the use of low-pitched overhanging roofs and other features to emphasize horizontality, the predominant characteristic of the midwestern landscape. The collaboration of landscape architect Jens Jensen and architect Frank Lloyd Wright and the work of Walter Burley Griffin, who was trained in both areas, led to important advances in adjusting manmade structures to natural landforms and in creating a gradual transition between structure and setting. Although these advances were applied most often to structures in suburban settings, they had underlying principles based on naturalism that would be readily applied by others to natural settings, such as parks, mountains, and seaside.

The principles and characteristics of the Prairie style were immediately embraced by the Arts and Crafts movement and were diffused through the publication of pattern books such as Hermann Valentin von Holst's *Modern American Homes* (1913), which featured Prairie style homes alongside works by California architects. Von Holst acknowledged that the back-to-nature movement called for country homes that were part of the scenery and were built of local materials.⁵⁰

The work of Charles and Henry Greene in southern California provided another essential link between the Shingle style and the design of buildings in national and state parks. Through their influence, the Shingle style found its way into the mainstream of the Arts and Crafts movement in America and blended with indigenous West Coast building forms, materials, and ideas. They also drew inspiration from the architecture and landscape design of Japan. Like the Prairie style architects, they aimed to integrate structure and setting and used terraces, walls, and outdoor features, including plantings, to blend the two and to create a gentle transition between inside and outside spaces. They drew heavily on native rock, particularly naturally occurring boulders to fashion battered piers, raised and battered stone foundations, massive bold fireplaces, and undulating retaining walls. They also adopted the vernacular forms of the Southwest and gave modern expression to traditional styles drawn from the Spanish haciendas and missions. As a result, their work infused the bungalow craze of the first two decades of the twentieth century with innumerable prototypes and design details. The work of Greene and Greene and the many references to their work in the publications and work of others were important sources for the designers of state and national parks through the 1930s.⁵¹

The mountain house designed for Edgar W. Camp in the Sierra Madre, California, in 1904 probably exerted more influence on park architecture than any other work by Greene and Greene. *The Craftsman* featured the house in December of 1909 as "a mountain bungalow whose appearance of crude construction is the result of skillful design." Although its plan was similar to that of the Bandini House, the Camp House was unique in its low, rambling character that adjusted to the site's sloping topography and boulder-strewn setting. The building's silhouette was created by a series of intersecting and overlapping roofs with broad gables and projecting eaves. The exterior walls were sheathed by vertical boards and battens of native wood. Inside, a massive fireplace

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

with "an appearance of great strength and ruggedness," was formed by piling up giant boulders around an unusually large fire opening with a capacity for huge logs. Interior beams of Oregon pine were roughly hewn, undressed, and left exposed. Outside, the chimney rose from the ground battered and constructed of stone "as if it were part of nature's magnificent rockpile." It formed a naturalistic surface continuous with the boulder foundation made of rough fieldstone. The east wing of the house extended out at an angle to form a terrace off the dining room that provided views of the valley below, departing from the U-shaped plan.⁵²

Smaller structures designed by Greene and Greene would also influence park architecture. The entrance portals and waiting station designed in about 1905 for the South Pasadena Realty and Improvement Company at Oaklawn Park were constructed of massive boulders fashioned into battered stone foundations and walls. In the walls of the waiting station, small stones were nested into the crevices formed by huge boulders, which decreased in size as they emerged upward and inward from the ground. The waiting station and the entry gate and pier were capped with overhanging tile roofs with exposed beams. The adjoining concrete walls of the reinforced-concrete Oaklawn Bridge were masked by a profusion of climbing vines. This portal, with a massive battered pier on one side, provided the prototype that would evolve from a pergola-inspired form with support piers of unequal size into a single battered pier with a hanging entry sign by the end of the 1920s. Such entry signs were built to mark the entrances to parks such as Lassen and Crater Lake well into the 1930s. The Shelter for Viewlovers built atop Monks Hill, Pasadena, in 1907 provided an even more exaggerated version of the Oaklawn waiting station, one intended for viewing. Here massive battered piers and exposed beams supported a greatly exaggerated overhanging roof. Both these structures provided a precedent for the open-air shelter that would first be directly adapted to the needs of the National Park Service in the scaled-down Glacier Point lookout in Yosemite in 1924.⁵³

The distinctive style of architecture that emerged in the Bay Area around San Francisco in the first two decades of the twentieth century also had a lasting influence on the design of park buildings. Bernard Maybeck was the leader of this style, which was characterized by indigenous materials of wood and stone, accommodation of buildings into natural hillsides and forests, use of exposed (and often stained) beams and trusses to vault interior spaces and support steeply pitched roofs, and tall vertical window walls to integrate indoor and outdoor spaces. Maybeck used laminated trusses to vault large interior spaces in his schools, churches, and clubhouses. Although this style drew directly from the English Arts and Crafts movement, it used American materials and followed principles of siting, hand craftsmanship, harmonizing nature and structure, and presenting scenic views that aligned it with the American movement. The influence of the Bay Area style was expressed in three Yosemite buildings: LeConte Memorial Lodge (1903 and 1919), Parsons Memorial Lodge (1915), and the Ranger's Clubhouse (1921). These buildings reflected the fusion of Bay Area sources and other influences of the Arts and Crafts

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

movement. Several features that distinguished the work of the Bay Area architects from their Pasadena contemporaries Greene and Greene were the steep roofs and the floor-to-ceiling windows, which often became part of the plastic form by creating bays and glazed alcoves. Maybeck explored the use of trusses to support steep roofs and create soaring interior spaces and developed a technique for laminating trusses using native wood materials. The exploration of truss systems and use of large windows with small panes opened up new possibilities for the design of national park buildings. The adaptation of the horizontal ribbon windows of Shingle style to a vertical format to provide large expansive views and light-filled interiors influenced and would be further developed by Gilbert Stanley Underwood in his national park lodges of the 1920s.⁵⁴

National park designers, those working for concessionaires as well as those working for the government, knew the work of Greene and Greene, Maybeck, and other California architects from published sources and from the works themselves. Certainly the LeConte and Parsons lodges that the Sierra Club had built at Yosemite were inspirational forms. The work of Maybeck and other Bay Area architects were an important link between the Shingle style and national park architecture. These practitioners used forms such as the octagon and hexagon and explored the relationships of space, site, view, and native materials that were in keeping with the Shingle style principles. Maybeck made significant advances in the relationship of interior space, external setting, structural design, and light--advances that would influence national park design.

The earliest hotels in the national parks date from the era before the advent of the automobile, when the transcontinental railroads brought visitors to the parks. These buildings represented a fusion of picturesque European prototypes, the Adirondack style, and an imagery of form and detail suitable to the West. Built at the height of the American Arts and Crafts movement, these buildings integrated the concerns for setting, structure, and decorative arts into a single unified and harmonious form that suited the natural surroundings of the parks where they were located. The Old Faithful Inn (1903) in Yellowstone National Park is considered the first "rustic" hotel built in the national parks in a large-scale effort to harmonize construction with the natural surroundings. Although the Swiss-influenced Adirondack style was adopted for the Northern Pacific Railroad's hotel by architect Robert Reamer, the proportions of structural features such as the imposing gabled roof pierced by window dormers were exaggerated. Logs, wood shingles, and stone were fashioned into structural features. Gnarled and twisted logwork formed interior and exterior decorative details such as railings and brackets, giving it an exuberant decorative appeal and a feeling of the western frontier. On the interior were a multistoried lobby and a massive fireplace.⁵⁵

The system of hotels and chalets built in Glacier National Park for the Great Northern Railway in 1913 is based on the European system of hostelries located within a day's hike or ride of each other. Swiss-influenced architectural themes--both the chalet form and details such as sawn-wood

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

balconies and clipped or jerkinhead gables--were carried out in several lodges, mountain chalets, hotels, and a store, built in varying scales. Some of the buildings were built predominantly of log, while others were of local stone available at the higher elevations. A similar architectural theme was used in Glacier's Lake MacDonald Lodge (1913) built by proprietor John Lewis, considered to be one of the finest hotels built in the Swiss style in the United States.⁵⁶

A synthesis of the style of Norwegian villas and the Swiss chalet form inspired the El Tovar Hotel (1905) built at the Grand Canyon for the Fred Harvey Company by Charles Whittlesey. In 1909, a rustic depot of massive log construction with Craftsman period details was built nearby as the terminus of the Atchison, Topeka, and Santa Fe Railway and as a fitting gateway to the resort area that was taking form on the South Rim.⁵⁷

Mary Elizabeth Jane Colter, the architect and interior designer for the Fred Harvey Company at Grand Canyon, forged her own unique expression of the Arts and Crafts movement. Her work was a synthesis of West Coast and midwestern influences and her study of the indigenous architecture of the Southwest. She was particularly inspired by the pueblo constructions, cliff dwellings, and temples found in the Mesa Verde ruins and living Hopi communities such as Oraibi, Arizona, often using as models for her own work. Whereas Oraibi influenced her Hopi House, Mesa Verde's Temple to the Sun inspired her design for the Desert View Watchtower. She studied the ruins from aerial photographs and called her designs "recreations" that captured the idea and feeling of the prehistoric models but were built on a scale that served modern-day functions. Colter's work was a fusion of cultural influences of the Southwest that included Spanish Colonial and territorial heritage as well as the traditions of contemporary and prehistoric Native Americans. The Spanish influence was visible in details such as the entry wall and bell arch at Hermit's Rest, a stopping point along the Fred Harvey Company's tour of the South Rim. Pioneer spirit abounded in her arrangement of historic and new buildings in the cabin cluster at the Bright Angel Lodge complex. Skilled in architecture, landscape design, and decorative arts, Colter was the quintessential practitioner of the Arts and Crafts movement. Colter's work--Hopi House (1913), Lookout House (1914), Phantom Ranch (1921), Hermit's Rest (1914), Desert View Watchtower (1932), and Bright Angel Lodge (1933-1935)--would have considerable influence on the designers of national and state parks.⁵⁸

The greatest source of design and detail in the Arts and Crafts tradition were the writings of Gustav Stickley in his periodical, *The Craftsman*, and in his books, *Craftsman Homes* of 1909 and *More Craftsman Homes* of 1912. Stickley frequently displayed the work of Greene and Greene and drew attention to the unity of site and setting displayed by the Edgar Camp House in the Sierra Madre. Stickley brought together articles on landscape design, architecture, and interior design, many of which illustrated principles and practices that were compatible with the National Park Service's principles for preserving landscape and harmonizing development. *The Craftsman* would have an enduring influence on the park designers of the 1920s and 1930s and would serve as

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

useful pattern books of details, interior and exterior, that could embellish the structures of national and state parks in the 1930s. An article entitled "The Effective Use of Cobblestone as a Link Between the House and the Landscape," which was published first in *The Craftsman* in November 1908 and a year later in *Craftsman Homes*, drew national attention to the use of cobblestones in West Coast architecture. The article pointed out the interesting effects achieved by using cobblestones in chimneys, walls, walks, and foundations. Such construction was particularly well suited for dwellings in rugged locations, the stone in its natural form being a harmonizing element that could closely connect landscape and building. The use of boulders for foundations and chimneys had wide application in the design and construction of park structures. It was commonly used for the foundations of pioneer homes and appeared over and over again in Shingle style dwellings and Adirondack cabins and lodges. Early on it had been used in the construction of Crater Lake Lodge in Oregon and Bear Mountain Inn in New York; it was adapted by Maier for the lower story of his museum at Yosemite and would appear in diverse variations in the construction of all types of park structures throughout the 1930s.⁵⁹

The Arts and Crafts movement, particularly through the bungalow craze, forged an appreciation of architectural details influenced by the Shingle style, the Prairie style, the West Coast work of Greene and Greene, and the Adirondack style, as well as native or indigenous forms of architecture. Practitioners used native materials, seeking designs that harmoniously integrated site, structure, and setting. They followed nature, avoided artificial appearances, capitalized on scenic vistas, used picturesque details, and unified interior spaces with the out-of-doors through porches, terraces, and pergolas. Boundaries between inside and outside were softened by terraces, porches, pools, plantings, patios, and gardens. While the Shingle style brought architects and landscape architects in collaboration with each other, it was only after the Columbian Exposition in 1893 that architects readily adopted landscape features and devices in their architectural designs and collaborated routinely with their landscape counterparts. This was especially true of the work of the Prairie style architects and Greene and Greene. This integration was well suited to the Arts and Crafts philosophy, endeavoring to establish a unity of home and hearth, community and nation, and dwelling and land. The bungalow movement seized upon a variety of styles and types that were part of the naturalistic, rustic tradition. Of the many bungalow guides and pattern books, *Bungalows, Camps and Mountain Houses* of 1915 by William Phillips Comstock and architect Clarence Eaton Schermerhorn provides perhaps the most diverse collection of prototypes adapted to out-of-door living and natural settings.

While national park designers Thomas Vint and Herbert Maier had firsthand knowledge of West Coast bungalows by Greene and Greene and others, other designers knew examples only through periodicals such as the *Western Architect* and publications by Stickley, Comstock and Schermerhorn, and others. The greatest manifestation of the bungalow craze was the unprecedented suburban growth and residential growth that occurred in California from 1900 to 1920.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Bungalows lining suburban streets and arranged into bungalow courts provided a lucrative source of income for real estate developers and a slate for creative expression for architects and landscape architects inspired by Greene and Greene and others.

Many designers explored the characteristics promoted by the Arts and Crafts movement in this period. Splayed or flared cobblestone foundations and massive stone piers were characteristic of the Los Angeles work of Arthur S. Heineman. He incorporated these features in the Parsons House (1909) in Altadena, the Los Robles Court in Pasadena, and other works. These characteristics were an important unifying characteristic of Sylvanus Marston's St. Francis Court (1909) in Pasadena, believed to be the first bungalow court in America. Here rugged, battered rockwork appeared not only in the foundation walls of the court's eleven dwellings but also in the entry gate and enclosing stone walls.

The ideas of America's Arts and Crafts movement had widespread applications in the development of the bungalow for vacation and suburban living. Followers of the movement shared Downing's concern for the unity of structure and landform, advocated the use of native materials such as log and stone, revived traditional and pioneering arts and crafts, and used naturalistic gardening. This movement carried forward the tenets of the Shingle style of the 1870s and 1880s that had been successfully used in buildings for public parks since the 1880s. The Arts and Crafts movement adapted English gardening practices to the grounds of the middle-class home, particularly Robinson's ideas for naturalizing the homesite with wild plants. It also assimilated Japanese building traditions that used rockwork and organic principles of design to integrate structure and site. Furthermore, it recognized diverse regional features of buildings and landscape that had emerged across the nation in efforts to unify buildings and sites, such as the Prairie style architecture of the Midwest, the open terraces and patios of the Southwest, and the log construction of the pioneers.

By the 1920s when National Park Service landscape engineers were working out a program of landscape design for national parks, there existed a well-established philosophy for park design drawn from the practices and precedents in landscape architecture and architecture. Architectural forms and landscape techniques coalesced to provide ideas, examples, solutions, and a philosophy for the design of park structures. These trends merged most emphatically in the Arts and Crafts tradition spurred by California's development of the bungalow, the work of Greene and Greene, and the publications of Stickley and others. By 1919, when the National Park Service instituted its first program of landscape design, there existed a firmly rooted tradition of landscape gardening and rustic architecture and a philosophy for landscape protection and harmonization in the development of natural areas. There were established principles of composition, practices for informal and naturalistic designs, and an aesthetic appreciation and a horticultural knowledge of American wild plants, which would be explored in the work of national park designers in the next decade.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

A Movement for National and State Parks

While the idea for urban parks expanded to take in parkways and outlying reservations, a movement was beginning to set aside outstanding natural features and scenic areas, such as Niagara Falls and Yosemite Valley, for public enjoyment. This movement began by an act of Congress of June 30, 1864, when the United States government granted Yosemite Valley and the Mariposa Grove of Big Trees to California for the purpose of public use and recreation. Shortly thereafter, a commission was appointed to make recommendations for opening up the land for public use. Although this was the first park set aside by Congress for scenic purposes, it remained under state control until 1906, when it was added to the Yosemite National Park established in 1890.

As a member of Yosemite's Board of Commissioners, Frederick Law Olmsted, Sr., prepared a preliminary report on the development of Yosemite Valley and the Mariposa Grove. Although intended for presentation to the California legislature, the report never passed beyond the commission. Olmsted's report set forth a philosophical and practical framework for the development of natural areas for the use and enjoyment of the public. Olmsted's report established the clear precedent for protecting natural features and scenery while at the same time making them accessible for the enjoyment of the public. It extended his respect of natural character, which was apparent in his plan for Central Park, to areas of outstanding scenic value and extensive wilderness. It, too, defined the concept of circulation systems for natural areas that included approach roads, circuit drives, resting places, turn-outs, paths leading to points of interest and scenic views, and, where necessary, bridges. While these features would be incorporated in Olmsted's urban parks, it was clearly the relationship of these features to wild, unspoiled land and vistas of supreme beauty that made the Yosemite recommendations relevant to the development of natural areas.⁶⁰

Set aside in 1872 as a "pleasuring-ground for the benefit and enjoyment of the people," Yellowstone became the first national park. Others followed. Sequoia and General Grant were established in 1890, the same year as Yosemite, and Mount Rainier (1899) and Crater Lake (1902) roughly a decade later. From 1902 to 1906, Wind Cave, Sully's Hill, Platt, and Mesa Verde were made parks. The Antiquities Act of 1906 enabled a number of national monuments to be added to the list; these included missions, ruins of prehistoric cultures, and unusual natural features such as Devil's Tower and Petrified Forest. Glacier was added to the list of parks in 1910, followed by Rocky Mountain in 1915, Hawaii Volcanoes and Lassen Volcanic in 1916, and Grand Canyon, Acadia (originally called Lafayette), and Zion in 1919. By the time the National Park Service took charge in 1917, there were 17 national parks and 22 national monuments covering an area greater than 9800 square miles.⁶¹

Although the idea of setting aside scenic reservations for public enjoyment emerged in the mid-nineteenth century, it did not gain widespread momentum until the early twentieth century. Efforts to save Niagara Falls began in the 1860s, but it was not until 1885 that the reservation was finally established

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

as New York's first state park. New York created the 800,000-acre Adirondack forest preserve the same year and, in 1894, designated a park encompassing much of the region's public and private land and having protective restrictions. In 1891, Minnesota founded Itasca State Park, setting aside the head-waters of the Mississippi River as the state's first scenic park. In 1897, New York prohibited the cutting of timber in the Adirondack forest preserve and two years later set aside a similar reserve in the Catskills. In 1895, the Palisades Interstate Park in New York and New Jersey was established in an effort to save the scenic palisades that extended many miles up the Hudson River from quarrying and other forms of destruction. A system of state parks took form in New York as parks such as Watkins Glen (1906) and Letchworth (1907) were created and separate regional commissions were established. Connecticut established its first park in 1887 and created a state park commission in 1912.⁶²

At the turn of the century, Minnesota and Wisconsin set aside parks on opposite shores of the Saint Croix River, and Massachusetts established the Mount Tom and Mount Greylock reservations. Shortly thereafter, Ohio began to set aside land around public reservoirs as public parks. Wisconsin established a state parks board in 1907 and soon after hired landscape architect John Nolen to conduct a state park survey with the purpose of founding new state parks. Idaho set aside its first park, Payette Lake, in 1909, and Illinois established its first natural park, Starved Rock, in 1911. In 1915, North Carolina set aside Mount Mitchell as its first park, and in 1916 Indiana established its first parks, McCormick's Creek and Turkey Run. In 1918, Iowa established its first state park, Backbone. California established the 10,000-acre Redwoods State Park in 1918, and, in 1920, the state's general assembly created a state park system. The years 1919 and 1920 saw the establishment of South Dakota's first park, Custer State Park, the addition of Clifty Falls to Indiana's parks, Old Salem to Illinois's, and Enfield to New York's parks, and the creation of a state park system in Iowa.⁶³

By 1920, the movement to create state parks and park systems had taken hold nationwide. The movement was spurred by a number of regional organizations founded to identify significant areas of scenic or historic interest and to urge state legislatures to preserve them. The first such organization was the American Scenic and Historic Preservation Society founded in 1895 in New York. Others included the Save-the-Redwoods League founded in California in 1918 and the Friends of Our Native Landscape founded in Illinois in 1913. Landscape architects were among the conservation-minded individuals who founded and fostered these organizations.

The state park to attract the most attention for its recreational facilities was the Palisades Interstate Park. It is an important link between the 19th-century urban parks, such as Franklin Park, and the scenic and recreational state parks of the 20th century. The Bear Mountain area of the park was developed in the early 20th century under the direction of Major William Welch, a civil engineer and the interstate park's general manager. By the end of 1916, Bear Mountain was a center for year-round recreation and the gateway to

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

extensive tracts of "wilderness" that lay to the west and contained heavily wooded and "well-watered" mountains abounding in deciduous forests, streams, and lakes. It attracted throngs of visitors, arriving by boat and ferry and by railroad. On the riverfront were several docks for the steamers that daily carried visitors from the city, a railroad station, a swimming beach with bath houses, and trails and ramps leading to the highland. One hundred and sixty-five feet above the Hudson lay Hessian Lake, a 40 acre spring-fed lake and the center of a large recreational area or "playground." The lake provided pleasure boating and fishing. Playing fields, tennis courts, a track, a children's play area, and other areas for sports were developed nearby. On the shores of the lake were picnic groves, a boathouse, a dancing pavilion, and a large rustic lodge. Camping took place at the far end of the lake. The wooded and mountainous land west of Bear Mountain was minimally developed with hiking trails and, as early as 1913, rustic camps for youth and other social organizations. In 1916, more than 2,000,000 conifers had been planted in this region, adding greatly to its beauty and undisturbed character.⁶⁴

Bear Mountain Inn, as the lodge was known, could accommodate more than 3,000 diners at one time. The first story was built of the moss-covered boulders taken from the old stone fences on the property. The second story was built of huge chestnut logs from surrounding forests. The building--with its massive stone fireplaces and chimney, and the broad sloping and overhanging roof supported on massive log brackets--echoed the Swiss-influenced lodges of the Adirondacks. Its size, bold use of moss-covered boulders, rusticated arched entrances, and gabled roof, however, clearly reflected the Playstead Shelter in Franklin Park. Although it lacked the grandeur of the great inns that were being built at the same time in the national parks, such as Old Faithful Inn at Yellowstone and the lodges and inns the Great Northern Railway was building at Glacier, it very much reflected the rustic tradition. For more than two decades, it remained the only rustic hotel and lodge in a state or national park in the eastern United States.

Several aspects of the Palisades Interstate Park would strongly influence the development of other state parks and the National Park Service's policies on recreational development. First was the program of organized camping that began in 1913 when the state built a camp for the Boys Scouts of America in the heavily wooded and mountainous area west of Bear Mountain. This program grew quickly and the park became known for its program of introducing urban youth to the experience of the woods. Organizational camping would be institutionalized by the National Park Service and Resettlement Administration in the development of recreation demonstration areas in the 1930s. Second was the park's educational programs that included nature centers within the organization camps, hiking trails, and later a centralized museum and nature trail. Third was its pioneering facilities for winter sports, including skiing, skating, and tobogganing, which gained popularity in national and state parks in the early 1930s. Bear Mountain and the Cook County Forest Preserve, outside Chicago, were leaders in the development of facilities for winter sports by the end of the 1920s.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

In May 1925, President Calvin Coolidge convened the National Conference on Outdoor Recreation, which covered diverse aspects of public recreation and was attended by individuals from many national organizations. The state park movement experienced rapid growth during the 1920s, through the efforts of many individuals and organizations, including Stephen Mather, director of the National Park Service. During the 1920s, many states including Arkansas, Kansas, Maine, Missouri, Nebraska, Oregon, Texas, Utah, and Washington acquired their first state parks. In 1923, Texas appointed a state park board, and, by 1927, had established 24 parks, most of which were waysides along state roads. Public forests having recreational uses existed in many states, including Pennsylvania, which by 1928 had over one million acres of state forests.⁶⁵

Existing state park systems expanded rapidly during the 1920s. By 1928, Iowa's park system included 39 parks and 7,413 acres. In 1924, New York's regional commissions were consolidated in a centralized state agency and by 1928 New York had 56 parks and over two million acres of parkland. In 1927, the California legislature established a state park commission, created a bond issue of six million dollars for the acquisition of state parks, and hired Frederick Law Olmsted, Jr., to conduct a survey for new park lands. Olmsted's survey, known as the California State Parks Survey, was completed in 1929 and identified 79 areas for acquisition. It also set out criteria for the selection and management of state parks and is recognized as a pivotal document in the history of state parks in the United States.⁶⁶

One major catalyst for the movement was the founding of the National Conference on State Parks. The organization was formed at a meeting organized by Iowa's governor and Stephen Mather and held at Des Moines in 1921. The organization's purpose was to urge governments--local, county, state, and national-- to acquire additional land and water areas for the study of natural history and its scientific aspects, for the preservation of wild life, and for recreation. Its goal was to put public parks, forests, and preserves within reach of all citizens. The national conference was also concerned with educating the public about the values and uses of recreational areas and encouraged private and individuals also "to acquire, maintain, and dedicate" similar areas for public pleasure. Although focused on state parks, the National Conference was the meeting ground for officials and interested professionals from all levels of government and from forests as well as parks. Common concerns and solutions were shared; principles and practices of park development were exchanged. The organization met annually and charted the progress being made nationwide in state legislation for state parks and the organization of statewide park systems. Mather followed the conference's progress and reported on it in his annual reports. Conferences were held in various state and national parks. From 1922 to 1927, the conference met at the Palisades Interstate in New York, Turkey Run State Park in Indiana, Gettysburg National Military Park, the proposed Shenandoah National Park, and Hot Springs National Park. During this time, regional conferences also formed in the Ohio River Valley and the Southwest.

In 1926, the National Conference on State Parks published *State Parks and*

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Recreational Uses of State Forests, a study requested by the conference on outdoor recreation the previous year. By this time, 43 states possessed state parks, state forests, or similar areas for outdoor recreation, covering more than 6.5 million acres. It was the first of a series of publications to appear in the next five years that charted the progress of the state parks movement. *State Recreation: Parks, Forests and Game Preserves* of 1928 analyzed the various approaches and methods state governments were using to acquire parks and administer them. It was a reference book that contained state-by-state essays and, in the form of a chart, provided a comprehensive list of the recreational areas in each state and information about their founding, location, size, special characteristics, and recreational facilities. A *State Park Anthology* of 1930 was a compendium of papers given at the annual meetings, reports by members, and articles written by specialists.⁶⁷

Several members of the landscape profession played a major role in the state park movement. Warren Manning and Henry Hubbard were the American Society of Landscape Architects's official representatives to the 1925 Conference on Outdoor Recreation; James Greenleaf and several others also attended, and John Nolen was appointed to the permanent executive council. Warren Manning, John Nolen, and Frederick Law Olmsted, Jr., conducted surveys and developed master plans for several state parks and park systems. Harold Caparn in 1916 wrote "Some Reasons for a General System of State Parks" in *Landscape Architecture*. The National Conference on State Parks' *A State Park Anthology* of 1930 included articles by James Greenleaf, Frederick Law Olmsted Jr., Harold Caparn, S. Herbert Hare, Emerson Knight, and many park officials. The following year, *Landscape Architecture* devoted an entire issue to the subject of state park acquisition and development and carried articles drawn from papers given by Wagner, Hare, Laurie D. Cox, and P.H. Elwood at that year's national conference meeting in St. Louis.⁶⁸

The Founding of the National Park Service and the Landscape Architecture Profession

Landscape architects were prominent among the conservation-minded individuals who advocated the founding of a National Park Service to administer the national parks and guide their development in the 1910s. The American Civic Association (ACA) and the American Society of Landscape Architects (ASLA) were influential advocates for national parks. In a letter to the ASLA, J. Horace McFarland, president of the ACA and the leader of the movement to establish a bureau to administer the national parks, called upon the profession of landscape architects to educate the public. Professional standards, not politics, in McFarland's opinion, should determine the future of the parks.

In February 1916, the ASLA held a conference devoted to the subject of "Our National Parks" and the bills pending before Congress to create a national park service. The ACA, with the cooperation of members of the ASLA, had drawn up the bill (H.R. 8668) introduced in the House of Representatives by William Kent of California on January 11, 1916. At its February conference, the ASLA

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

resolved to support the bill and pledged to cooperate with the new agency in any way possible, consistent with the recognized ethics of the profession. This conference promoted the stewardship of the landscape architecture profession for national parks and the preeminence of a landscape preservation ethic in the development of natural areas of outstanding value.⁶⁹

Henry Hubbard, a professor of landscape architecture at Harvard University and partner in Olmsted Brothers, upheld the profession's stewardship role the following year in *An Introduction to the Study of Landscape Design*, which he wrote with Theodora Kimball, the Harvard's librarian for landscape architecture. Hubbard called upon members of his profession to work toward preserving the primeval and characteristic scenery of what he called America's "wild landscape." Removing natural scenery from economic use and preserving it for public enjoyment as state and national parks was a civic and professional obligation. Hubbard called for the nationwide planning of areas to be preserved as landscape parks and reservations at all levels, town and city, state and nation. He urged members of his profession to take responsibility for identifying areas of outstanding scenic beauty and for educating the public about their value.⁷⁰

The vision and wisdom of this generation of landscape designers, which included Pray, Hubbard, Olmsted, Jr., Warren Manning, and others, provided the philosophical underpinnings of the new bureau. From 1916 to 1942, the landscape profession, in practice and in theory, would have a leading role in the development of parklands for public use and enjoyment. The ASLA followed the events and legislation concerning national parks, supporting bills that would limit and prohibit economic uses of the parks, and established a committee to follow national park issues.

Efforts to create a national park service were successful. The Organic Act of 1916, creating the National Park Service, charged the service with promoting and regulating the use of national parks in ways that would "conserve the scenery and natural and historic objects and wildlife therein by such means as shall leave them unimpaired for the enjoyment of future generations." Stephen Mather was appointed the new agency's first Director, and a year later the new agency began to take shape. Beginning in 1918, the National Park Service hired landscape architects to plan and design park villages, campgrounds, roads and trails, and facilities and to provide advice on issues affecting the scenery of the parks. The first of these so-called landscape engineers--Charles Punchard, Daniel Hull, and Thomas Vint--integrated the principles and practices of their profession with the fundamental conservationist philosophy of park service directors Stephen Mather and Horace Albright. These landscape engineers and architects relied heavily upon their educational training and the principles published by Andrew Jackson Downing, Henry Hubbard, Samuel Parsons, Frank Waugh, and others. Some of the national park designers, including Punchard, Hull, Merel Sager, and Conrad Wirth had studied under Hubbard at Harvard or Waugh at Massachusetts Agricultural College. Others received their training in some of the leading landscape design programs in the nation, including those at the University of California, Berkeley; Cornell University; the University of

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Illinois; and Iowa State College.

In numerous instances, formally and informally, the service called upon national experts and private practitioners to help solve some of its most pressing problems. Frederick Law Olmsted, Jr., to whom the language of the enabling legislation is attributed, had a strong presence in the parks and remained a steadfast supporter of landscape preservation. In 1920 and 1921, he visited the national parks and forests of the West, accompanying Director Mather on some occasions. Experiencing the sense of freedom and independence stimulated by the vast untouched tracts of these reservations, Olmsted became more than ever convinced of the need to preserve these areas "substantially unimpaired by the intrusion of other functions" and to set aside wilderness areas in national parks and forests.⁷¹

Olmsted served on Yosemite's expert advisory committee from 1928 to 1956 and wrote numerous comprehensive reports for the committee. Olmsted's influence went far beyond the projects on which he commented. Yosemite's problems were some of the service's most vexing, and Olmsted's continuing involvement provided in-depth analyses of special problems and carefully worked out solutions that affected how similar problems in other parks were treated. His private practice, including the design of the grounds of the Ahwahnee Hotel in Yosemite Valley and the development of a plan for California's state parks, provided models for the development and management of natural areas.

Henry Hubbard also remained involved in the affairs of the National Park Service. He was a delegate and committee member of the National Conference on Outdoor Recreation in the 1920s. He served on the National Capital Park and Planning Commission from 1932 until his death in 1947. As a professor of landscape architecture at Harvard from 1906 to 1941 and as coauthor of the field's primary textbook, *An Introduction to the Study of Landscape Design*, first published in 1917 and revised in 1929, Hubbard exerted widespread influence on the practice and character of park design in national and state parks.

Hubbard continued to write on park issues and, as editor of *Landscape Architecture*, circulated information about the national parks. In 1941, he wrote an article for *Park and Recreation Progress* entitled "The Designer in National Parks," where he detailed the important role the landscape architect had in preserving natural character and developing a national park. In 1939, Hubbard published "Landscape Development Based on Conservation, as Practiced in the National Park Service" in *Landscape Architecture*, where he summarized the master planning process behind the park service's program of landscape protection and harmonization: First came the location of the elements of park development--roads, trails, and buildings--and then the design of architectural features using native materials and harmonizing principles. And finally came the reestablishment of the natural setting through the planting of native materials.⁷²

The National Park Service called upon members of the federal Commission of Fine Arts to review questionable issues and designs, using the authority given federal land-managing agencies by Executive Order 1010 of January 19, 1909.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Olmsted served as the commission member for landscape architecture from 1910 to 1918, including the years when the National Park Service was being promoted and organized. In 1919, Chairman Charles Moore visited Yosemite, and shortly thereafter the commission helped the park service retain the services of Myron Hunt, a Los Angeles landscape architect, to develop a new plan for Yosemite Valley. As the commission member for landscape architecture from 1918 to 1927, James L. Greenleaf, whose private estate work included informal, naturalistic designs, visited Yosemite in 1922 to consult with landscape engineer Daniel Hull on plans for Yosemite Village. For several years, he advised Hull on the naturalistic design of masonry for guardrails and bridges. In 1928, Ferruccio Vitale, who succeeded Greenleaf as the commission's landscape architecture representative, traveled west to help Chief Landscape Architect Thomas Vint locate several park museums and to study landscape problems at Mammoth Hot Springs in Yellowstone. On this trip, Vitale also reviewed problems in the Many Glacier area of Glacier National Park and later provided designs for the park's Swiftcurrent Bridge.

The nation's leading authority on parkways, Gilmore Clarke of New York's Westchester County Parks Commission, also developed close ties with the service. After Vitale's visit to Yellowstone's Mammoth Hot Springs headquarters, Vint had concluded that no more development should occur there until a general plan had been worked out; it was Clarke who created general development plans for the area in 1930. Vint and Clarke also ran a program in which they exchanged staff for periods of several months as a way of mutually enhancing their design programs. Clarke served on the Commission of Fine Arts from 1932 to 1950, when he helped develop parkways around the nation's capital. He also trained landscape architects such as Stanley Abbott, who later worked for the National Park Service and designed the Blue Ridge Parkway. Clarke and Charles W. Eliot II, planner for the National Capital Park and Planning Commission, visited Rocky Mountain National Park in 1930 to help the park service work out the final boundaries for the park and develop a plan for restoring the park's natural vegetation.

Other landscape designers advised on landscape matters, sometimes without compensation. Jens Jensen, for instance, supervised some planting at Hot Springs Reservation in 1919; Harold Caparn advised on boundary issues at Yellowstone in 1926; and Beatrix Farrand was hired by John D. Rockefeller to make recommendations for clearing vistas and adding plantings along the carriage roads at Acadia. Others experienced as educators or park designers, including P.H. Elwood, Jr., Frank Culley, S. B. de Boer, George Nason, and Harvey Cornell, carried the ethics of landscape preservation and rustic landscape design to state parks through New Deal's Emergency Conservation Work program as National Park Service inspectors or, in the case of Waugh, as authors of technical manuals for conservation work.

The Early Development of National Parks

When the National Park Service took charge of the parks and monuments in

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

1917, a varied assortment of roads, trails, patrol cabins, and rudimentary ranger stations existed in most parks, but in general, visits to the parks were hampered by poor roads and lack of facilities. By far the grandest of park architecture were the hotels that concessionaires, often subsidiaries of the western railroads, had built at Yellowstone, Glacier, and Crater Lake. Concessionaires, too, operated campgrounds and provided touring cars to transport visitors to the scenic features of the park. In some parks, private organizations had built lodges, such as the Parsons Memorial Lodge at Yosemite built in 1915 by the Sierra Club.⁷³

When the National Park Service was organized in 1918, park development was concerned with the construction of roads and trails, facilities built by concessionaires, forest protection, and creation of campgrounds. Accessibility being his foremost concern, National Park Service Director Stephen T. Mather wished to open up areas of existing parks by creating new roads. He believed that the federal government had an obligation to pursue a broad policy for the extension of road systems in the parks and to encourage travel by railroad and automobile. Mather put great effort into developing cooperative relationships with the railroads--some of which, like the Santa Fe and Great Northern, already had a strong presence in the parks--and with the automobile associations, or "good roads" associations, that were emerging across the nation as the automobile gained in popularity and Americans began to satisfy their urge to see the country.

Most of the improvements funded in the parks by the United States government until this time had consisted of roads and trails. A well-rooted philosophy existed for development that was suited to the topography of a particular site and the natural character of its surroundings.

From 1883 until 1917, park roads were built under the supervision of civil engineers from the War Department. Built under the direction of Major H. M. Chittenden, Yellowstone's roads were the best in the national parks. Among his engineering achievements were the road over Mount Washburn, the 200-foot Golden Gate Viaduct--a series of eleven concrete arches built into a cliff wall, and the Yellowstone River (later Chittenden) Bridge--a 120-foot arch of steel and concrete. Creating a curving roadway that flowed with the natural topography and laid lightly on the land had been the goal of park designers even before the creation of the National Park Service. Writing of the extension of park roads in Yellowstone in 1915, Chittenden stated that roads should be restricted to actual necessities and that the park should be preserved in its natural state to the fullest degree possible. Roads were to be well-built.

Roads were to harmonize with the natural features, provide visitors access to features of natural beauty, and be inconspicuous. The route for a park road was laid out on a topographical map and then examined in the field to ensure that it was feasible and to make any changes to enhance the views from the road or to take in a waterfall, rock outcropping, or other scenic feature. The road was staked out so that markers were visible from distant points and could be studied from several viewpoints, including nearby trees, and adjusted to present the most attractive views. Barren areas were enhanced by plantings or

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

by the creation of a small lake or pond. The final survey and preparation of plans and estimated costs were similar to the procedures followed in constructing country highways. Center-line stakes were placed at 100-foot intervals, called stations, and cross sections were taken at each station to determine the amount of material to be moved. As each plan was prepared, it was checked in the field, and areas requiring cuts and fill, culverts, and ditches were noted. The final plans were drawn to scale on large sheets of tracing paper and covered six to eight mile sections of the road. Park buildings were to follow an architectural scheme and form harmonious and picturesque groupings.⁷⁴

Gateways held particular importance. Mather urged the construction of gateways to mark park entrances. Gateways were to be simple, dignified, and in harmony with their environments; they were not, however, to be costly structures. The gateways were envisioned not only as physical barriers marking park boundaries but also as points of transition orienting the visitors to an environment where nature predominated and amenities were rendered inconspicuous through harmonious structures. At Yellowstone's Gardiner Entrance, a great Roman arch fashioned from clinker-style stonemasonry, had been built by engineer H. M. Chittenden in 1903. At Mount Rainier's Nisqually Entrance, a massive gateway was built about 1910, with posts made of the peeled trunks of native western red cedar. The gateways introduced an architectural theme that harmonized with the natural setting of each location and could be carried over into the development of similar areas elsewhere in the park, giving a consistent identity to park structures. Administration buildings, which would give the government an identifiable presence in the park, were likewise needed throughout the park system.

The construction of bridges presented problems in both engineering and aesthetics. By 1915 various methods of construction were being used in the national parks; most park bridges were made from timber cut on site and assembled unhewn. Depending on the diameter and strength of the logs, such bridges could be built to accommodate vehicles as well as pedestrians. At Yosemite, where bridges were fashioned from timber cut nearby and served park visitors as similar ones had served pioneers to the area, yellow pine, tamarack, and incense cedar were commonly used. Although log bridges were sturdy, they were subject to decay and had a relatively brief life span.

There was disagreement about the types of bridges appropriate for the natural setting of a park. While many applauded achievements such as the Chittenden Bridge, a concrete arch bridge in Yellowstone, others felt that only natural materials of stone and timber should be used. Truss bridges up to 87 1/2 feet long were being constructed in Yosemite. Builders were working on new designs that reduced the distance between the floor and the top chord "so a person could walk over the bridge and get a good view of the scenery without looking through the trusses." Arch construction was preferred because it offered the advantage of raising the elevation of the center point of the bridge and avoiding the interference and vertical dimensions of a trussed superstructure.⁷⁵

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Trails were located so that travelers could experience many beautiful views, reach various points of interest, and find picturesque spots to rest and camp. Ideally trails were to ascend long steep hills at a grade between 15 percent and 30 percent and were to be four feet wide. Trail construction required both cutting into the slope by "benching" and laying and back filling dry rubble walls on the downhill slope to support the trail. Overhanging limbs and undergrowth beside the trail were to be cut back. The grade was varied to allow for better drainage and to give the traveler some relief from a continuous uphill climb. Ditches and other forms of drainage such as water breaks made from logs or preferably flat split rocks embedded in the ground were to be included. Culverts and drains were constructed beneath the trail to allow streams to flow in an uninterrupted course downhill. Trail bridges for the most part were simple log or timber constructions. Trail improvements included the construction of stairways and safe overlooks. A stairway built to the summit of Moro Rock, in Sequoia National Park, was a sturdy 364-foot structure of wood timbers, planks, and railings and represented the common type of trail improvement built in the 1910s and 1920s to give visitors access to precipitous and spectacular viewpoints.⁷⁶

Park buildings were to follow an architectural scheme and form harmonious and picturesque groupings. Park villages were to be carefully planned for places such as Yosemite Valley, where five or six thousand people could gather at one time and find supplies, food, and lodging. Park villages required roads, a lodge, tent sites, dining hall, camp store, and gas station, as well as utilities for water, sanitation, telephone, and electricity. A three-tiered system of accommodations was envisioned which provided hotels for overnight lodging, permanent camps where visitors could sleep in tents and take meals in a dining room, and camps where visitors could sleep in tents and prepare their own food. Outlines were made of all the buildings to be constructed over a ten-year period; locations for these were carefully selected and an architectural scheme determined to provide a picturesque and efficient arrangement.⁷⁷

1918 Policy of Harmonization

The need to forge a policy for developing and managing the national parks was great. On May 13, 1918, Secretary of the Interior Franklin Lane approved a statement of policy to guide the administration of the National Park Service. This document set forth broad principles and objectives that would guide the service in its stewardship of the parks and its efforts to make parks accessible and enjoyable to the public. First of all, criteria set for new parks, called park projects, required areas to possess "scenery of supreme and distinctive quality or some natural feature so extraordinary or unique as to be of national interest and importance."⁷⁸

The statement set forth three fundamental principles, echoing the language of the 1916 enabling legislation:

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

First, that the national parks must be maintained in absolutely unimpaired form for the use of future generations as well as those of our own time; second, that they are set apart for the use, observation, health, and pleasure of the people; and third, that the national interest must dictate all decisions affecting public or private enterprise in the parks.⁷⁹

This policy made the public interest preeminent in all national park matters, present and future, raising several practical implications and limitations. Summer homes were prohibited, as were commercial uses not specifically authorized by law or incidental to accommodating and entertaining the public. Grazing was prohibited or restricted. Cutting timber was allowed only where it was needed to construct buildings or other improvements and where it could be removed without damaging the forests or disfiguring the landscape; cutting was also allowed to thin forests or clear vistas to improve scenic features or to eliminate insect infestations or diseases common to forests and shrubs.⁸⁰

All parks were to be open to automobiles, motorcycles, and other vehicles of all kinds and were to provide a variety of facilities for the comfort of tourists. Outdoor sports were to be allowed and aided as far as possible, except hunting and other activities that would injure park wildlife. Especially favored were mountain climbing, horseback riding, walking, motoring, swimming, boating, and fishing. Winter sports were to be developed in parks that were accessible throughout the year. Parks were to provide opportunities for classes in science and establish museums containing exhibits on park flora and fauna. Accommodations were to serve various classes of visitors and included low-priced camps as well as comfortable and even luxurious hotels operated by the concessionaires. As funds allowed, the government was to create and maintain a system of free campsites by clearing areas and equipping them with water and sanitation facilities.⁸¹

Above all, the 1918 statement of policy established the mechanism for a process of park design and planning based on the principles of landscape preservation and harmonization. Responsibility for carrying out such a process was placed under the aegis of a landscape engineer. The policy stated:

In the construction of roads, trails, buildings, and other improvements, particular attention must be devoted always to the harmonizing of these improvements with the landscape. This is a most important item in our program of development and requires the employment of trained engineers who either possess a knowledge of landscape architecture or have a proper appreciation of the aesthetic value of park lands. All improvements will be carried out in accordance with a preconceived plan developed with special reference to the preservation of the landscape, and comprehensive plans for future development of the national parks on an adequate scale will be prepared as funds are available for this purpose.⁸²

The 1918 statement aligned park development and natural conservation, thus

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

upholding the dual mission of the National Park Service. Mather's thinking was clearly influenced by the landscape architecture profession's position on the stewardship of natural areas and the growing movement for parks across the nation. Common practices used in country or rustic areas of city parks were immediately adopted. Construction was to disturb the ground as little as possible. Improvements were to be of native materials and rustic in character. Obtrusive development was to be avoided altogether or placed in inconspicuous locations and screened from public view.

In the fifteen years following the 1918 declaration of policy and preceding the massive expansion of park development that began in 1933, National Park Service landscape architects and engineers forged a cohesive style of naturalistic park design. This style would be rooted in the fundamental two-fold philosophy, first, that landscape be preserved, and second, that all construction harmonize with nature. It evolved as designers encountered landscape problems and arrived at practical and aesthetic solutions. This style--translated into a set of principles and practices--would have lasting influence on the character of national, state, and metropolitan parks and public highways across the nation.

The Role of the Landscape Engineer

All improvements in the national parks--roads, trails, and buildings--were to be carefully harmonized with the landscape. Accomplishing this, the 1918 policy recognized, required the expertise of "engineers who possessed a knowledge of landscape architecture or appreciated the aesthetic value of park lands." Director Mather appointed Charles P. Punchard, Jr., to fill the role of the National Park Service's first landscape engineer, as park designers were called at the time. Daniel R. Hull followed Punchard as the Service's principal landscape engineer from 1920 to 1927. Thomas C. Vint, Hull's assistant since 1922, took over this role in 1927, heading first the Landscape Division of the Western Field Office and for many years later the Branch of Plans and Design. It wasn't until 1928 that landscape engineers were officially referred to as landscape architects.

Punchard forged a role that combined stewardship for the park with practical day-to-day management of park facilities. He was responsible for the design of all government structures and the location of roads and other structures including ranger cabins, rest houses, checking stations, gateway structures, employees' cottages, and comfort stations. He also directed forest improvement and vista thinning and the preservation of the timber along the park road. He had responsibility for the design of villages where commercial services for the comfort of the tourist and the camper were located and the design and location of the automobile camps. He consulted closely with park superintendents and provided advice in the form of consultations, sketches, working drawings, and detailed instructions for improvements. He assisted the public operators, or concessionaires, in designing and improving the physical appearance of their facilities.⁸³

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Punchard played a key role in translating the landscape policy of the National Park Service into practices that would influence the character and management of the parks. His reports and designs, furthermore, laid a solid ground, philosophically and functionally, for future landscape work. Punchard's work followed the state-of-the-art principles for developing natural areas that had evolved out of the American landscape gardening tradition and were set forth in Henry Hubbard's *Introduction to the Study of Landscape Design*. Improvements were many, each requiring a specific treatment stemming from the professional landscape practice of the day. These approaches were in keeping with Mather's vision for the preservation and restoration of the native landscape and the broad progressive thought of an era that advocated conservation of natural reservations and highly acclaimed the nation's diverse native characteristics.

Punchard's first task was a comprehensive study of the existing conditions and landscape problems of each park. During his first year, he visited seven national parks and four monuments, spending two and a half months in Yellowstone and seven months in Yosemite. He studied the various types of scenery, analyzing in detail landscape problems that required immediate solution and identifying others that needed treatment in the future.

Foremost among Punchard's responsibilities was protecting the landscape of the national parks. Preservation meant maintaining existing natural conditions and keeping views free of manmade intrusions. It also meant restoring areas where natural conditions had been lost owing to previous uses or activities. Debris and deteriorated buildings could be removed, and the sites of mining or lumber camps or old homesteads cleared. Punchard drew attention to diverse landscape problems, both major and minor, and provided practical solutions for eliminating unsightly conditions, called cleanup. His solutions set precedents for plans and designs that prevented the future occurrence of unsightly conditions and fostered harmonization. By controlling the numerous details that affected the visual appearance of a scenic feature, roadway, or developed area, the landscape designer could work toward maintaining the overall scenic character of the park. Cleanup entailed the removal of rubbish, dilapidated vacant structures, and even dead or dying timber alongside roads, in lakes, or at scenic features. One of his first projects of this type was the removal of dead wood and debris from the terraces at the Mammoth Hot Springs formation.

Punchard's work in Yosemite laid a strong philosophical and practical basis for vegetation management based on scenic values. Punchard spent the winter of 1919 in Yosemite, where he closely studied the landscape from a historical perspective, much as Charles Eliot had studied the Massachusetts reservations. Visualizing the scenic potential of Mirror Lake in Yosemite Valley, Punchard recommended the removal of dead and dying timber and other sediments. Submerged trees were likewise removed from Lake Eleanor, which had been dammed as part of the San Francisco power and water project in Yosemite. Concerned about the encroachment of trees and shrubs upon the splendid meadows of Yosemite Valley, Punchard closely studied the natural processes and cultural influences that affected the meadows. He recommended that trees and shrubs be

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

thinned and cleared to preserve the health of the larger trees, provide protection against serious fires, and open up interesting open spaces and vistas on the valley floor.⁸⁴

Vistas dominated the landscape architect's concern for scenery preservation, and capturing scenic vistas was one of the primary forces that drove the landscape engineer's recommendations for locating roads and trails. This concern was secondary only to making sure that popular vistas remained unimpaired and free from intrusion. The clearing of timber to improve or expose vistas occupied some of Punchard's time in Yellowstone in 1919.

Campground improvements took a considerable amount of Punchard's time. Most parks needed new or enlarged campgrounds to serve the increasing numbers of motorists who visited the parks in the aftermath of World War I, when Mather's efforts to promote parks coincided with the burgeoning popularity of automobile transportation. Punchard's work entailed locating and developing permanent automobile camps or rehabilitating existing camps. Campgrounds were located where there was a supply of water and where they could be screened from the park roads and were reached by graded and surfaced side roads. At areas such as the Upper Geyser Basin at Yellowstone, small dams were built to create small reservoirs. Elsewhere, water was piped in from streams and lakes known to be free of pollution. Trees were cut and stumps and dead wood removed to provide space for roads, parking, and outdoor living. Fireplaces with grills for open-air cooking not only provided a welcome amenity but also reduced fire hazards. Sanitary toilet facilities were constructed. Seats, tables, and shelters were additional improvements.⁸⁵

Plans were necessary for all forms of development. The 1918 statement of policy called for the preparation of comprehensive plans for future development of the national parks. In 1920, Mather announced that all future improvements by both the service and the concessionaires were to be based on an organized scheme of development in order "to avoid mistakes in the location and design which the service inherited." Concessionaires were to submit "intelligent, well-prepared plans" for Punchard's review. The first plans took the form of organized schemes of development for areas of the parks called villages where both government and concessionaire's facilities were centered. The planning process involved the director of the National Park Service, the park superintendents, members of the park advisory committees, and the park concessionaires. Each scheme clustered buildings together functionally and aesthetically into an attractive and harmonious "ensemble" following a common architectural scheme.⁸⁶

Park development and operations required maintenance facilities. Equipment was necessary for the construction and maintenance of roads, trails, and buildings. Such activities included ongoing repairs and the annual clearing of debris from winter storms on mountain roads. Some parks were already excellently arranged administratively, but conditions varied widely. In the worst cases, buildings were scattered, inadequate in size, and poorly located, and this lack of organization led to inefficiency. To remedy this situation, Punchard outlined a typical industrial group that included structures essential

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

for park maintenance, including stables, wagon and equipment sheds, a garage, a warehouse, and shops for machinery, blacksmithing, electrical work, painting, plumbing, and carpentry. Housing and mess halls for laborers were included in permanent camps. Buildings were arranged to make maintenance activities more efficient. The industrial group was often located within the headquarters area. Punchard and Hull continued to study these conditions with a view to coordinating these developments in a single area for "most effective administration."⁸⁷

Increasing numbers of visitors put pressure on the National Park Service to improve and develop new facilities, such as museums, observation stations, checking stations, comfort stations, and administration buildings. Plans made in the early 1920s to move the old village in Yosemite Valley out of the open meadows to a new site under the trees and against the valley walls established the concept of the "plaza" as the center of park business and of locating development under the screen of vegetation. Overcrowding in many parks led designers to identify additional areas for development and to separate the areas for park housing and maintenance. The influx of automobiles into parks created need for parking areas, campgrounds, gasoline stations, and watering stops. Concessionaires wishing to expand accommodations or develop new ones worked closely with park designers to reach solutions that were appropriate for park use and harmonious with park scenery.

By the end of 1920, development schemes had been formed for several parks. The concessionaires' development of administrative groups and facilities were central to most of these plans. In most parks, such schemes had to accommodate existing development as well as future needs. An organized plan for the development of the areas, including commercial, industrial, and residential zones, had been formulated at Yosemite. At Mount Rainier, plans were approved for future building at Paradise Valley to accommodate rapidly increasing tourist travel and for the development of the newly acquired land at Longmire as the park's administrative headquarters. The Longmire development called for the removal of old buildings and the development of an open meadow as in Yosemite Village. At Rocky Mountain National Park, plans for an administrative site in the village of Estes Park were developed and the problems of housing park employees and storing park equipment necessary for improvement work reviewed.⁸⁸

Punchard's solution for clusters of administrative and commercial buildings along three sides of a village square with the road passing along the fourth side would be repeated throughout the western national parks, including Mount Rainier and Yosemite. Punchard's scheme established the precedent for the village plaza having a common architectural character that would occur in national parks throughout the 1920s and early 1930s.

Topographic maps, which provided a record of contours, drainage patterns, and existing built features, were essential to park planning and design. Such maps were central to the process of landscape design as it had evolved in the United States under the influence of the Olmsted firm. Punchard, who had spent much effort surveying existing conditions on the ground, urged park

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

superintendents to prepare maps of their parks showing the location of all buildings; roads; bridges; water and sewer mains; electric light, power, and telephone lines; and other elements in relation to the contours and natural features of the park. This information was essential to planning development areas, to coordinating the engineering and landscape work, and to working with park superintendents, engineers, and concessionaires. Such mapping was generally conducted by park engineers and preceded the layout of roads, utilities, and other facilities in the developed areas of national parks. In the 1930s, much of the mapping was done by crews of Civilian Conservation Corps enrollees before planning and construction.⁸⁹

The landscape engineer played an important role in locating all park facilities. Beyond the basic engineering questions of suitability of soil and terrain, provision of water, and accessibility, the location of park facilities involved a number of landscape issues, particularly the effect that facilities had on scenic views. From the beginning, facilities were to be as inconspicuous as possible and to be situated so that they did not interfere with or intrude upon scenic vistas. The landscape engineer was involved in the decision on where to locate not only government buildings but also the lodges, cabins, stores, and gas stations operated by the concessionaires. Incinerators, power plants, maintenance shops, and garages all were placed where they would not be seen by the visiting public but where they could efficiently serve their essential functions. Since forested locations and rising elevations often provided the best cover, it was not surprising that screening development by planting stands of trees became a standard practice by the late 1920s, especially in the case of maintenance buildings, comfort stations, and gas stations. Of the many planting conventions practiced by park designers in the early years of the service, screening was the most important and the one that the service continued to practice on a large scale and promoted in its portfolios of the 1930s, *Park Structures and Facilities* and *Park and Recreation Structures*.

Punchard looked to the character of design, materials, and method of construction as ways to achieve harmony with nature. He designed employees' cottages, ranger stations, automobile checking stations, comfort stations, and other buildings. In an advisory role, Punchard was now able to critique the plans drawn up by the superintendents and to encourage them to accept his assistance. The locations of buildings, whether built by the government or the concessionaire, were selected by the park superintendent in "conference with the landscape engineer on the ground." The landscape engineers selected and marked all timber to be cut to make way for construction. This was the beginning of the collaboration between park superintendents and landscape engineers in all matters pertaining to park design. This collaboration resembled the professional and client relationship common to the professional practice of landscape architecture and would characterize the process of national park design for years to come. Punchard established a standard for the functionalism and harmonious construction of park buildings in keeping with the character of other buildings and the natural setting. Punchard explored

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

the use of native materials, from volcanic rock to natural timbers. He worked out solutions for comfort, sanitation, convenience, and pleasure in park campgrounds.⁹⁰

Early park designers recognized that the best approach for designing harmonious park structures was to use native materials. The practical problem of getting building materials to remote locations made this not only desirable, but essential. Economics was a factor, too, since the construction of buildings of any type was limited by the \$1,500 ceiling that Congress had placed on the cost of park buildings without special appropriations. Gateways were designed for several parks that were unique in design and harmonious with their surroundings, including one for Yellowstone's Cody Entrance, which featured a portal of massive local logs that was in scale and character with the surrounding forest and modeled after the Mount Rainier arch. Log community buildings were built in the larger campgrounds such as Yellowstone's Canyon and Old Faithful campgrounds. Accessible to both the government free camps and the concessionaire's complexes, these buildings contained bathing facilities for both men and women, a store, housing for one or more rangers, a large meeting room with chairs and a fireplace, and perhaps a post office. This building type would continue to be a popular feature of park campgrounds in the 1920s and 1930s, and several outstanding examples are those built at Paradise and Longmire at Mount Rainier in the late 1920s.

Daniel Hull's contributions to national park design were varied. His tenure is best described as a period of experimentation building upon Punchard's groundwork and expanding the principles and practices of naturalistic design particularly in planning, road-building, and park architecture. He took a leading role in designing park communities and working with concessionaires to develop well-planned facilities. He designed park structures ranging from entrance stations to bridges, and, by working with the architects of park museums and concessionaire's facilities, Hull advanced the principles of rustic architectural style. Under Hull's direction, the landscape engineers assumed a leading role in the development of park roads and trails and developed a technique of stonemasonry that incorporated native materials and gave bridges, culverts, and guardrail an informal appearance that harmonized with nature. At this time, the national parks also began to develop comprehensive plans to guide all future improvements throughout a park. From 1922, Hull was assisted by Thomas Vint who followed him as the principal landscape engineer (later called landscape architect) in 1927.

Hull continued the work of scenery preservation and restoration initiated by Punchard. He continually called for cleanup along roads and in developed areas. He sought ways to improve the appearance of necessary intrusions into the landscape. He introduced the idea that cuts created along roads during construction be graded to form gently sloping banks, rather than abrupt ones, so that they might reseed themselves and thus blend into the natural landscape. Cautioning against easy solutions, he urged that utilities, such as telephone lines, electric service, and sprinkling tanks, be placed where they would be least noticeable. He called for the removal of unnecessary structures by the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

government or the concessionaires.⁹¹

Private concern for the appearance of park roadsides emerged in Yellowstone, where fallen and dying trees as well as utility poles and wires disfigured the scenery along the roads. The first work in what became known as roadside cleanup began with private funds in 1924. Roadside cleanup entailed the removal of dead and fallen trees and other debris that accumulated in the woodlands along the park roads and the placement of telephone wire underground. With funds from John D. Rockefeller, workers cleared and beautified many miles of roadside in Yellowstone National Park beginning in 1924. It was not until the end of the 1920s that this work became an integral part of park service operations and received funding under annual appropriations.⁹²

Under Hull's direction, the landscape program became more and more involved with the problems of planning for villages. Grand Canyon and Yosemite received substantial attention in the early 1920s. Hull was called upon to design a variety of new park structures, including administration buildings, community halls, ranger stations, and lookouts. It was often difficult to achieve harmony with nature in areas that had been developed in a haphazard fashion or where traffic and demand for visitor use greatly surpassed the capacity of existing facilities.

One of the pressing problems that concerned Mather was Yosemite Village. As early as 1916, he called for the building of a new village, since the old village was subject to flooding. A new site was selected away from the river and under a canopy of trees so that the village was less conspicuous from popular viewpoints on the rim. The federal Commission of Fine Arts, following Chairman Charles Moore's visit in 1918, continued to be interested in the future of Yosemite Village. The new village was planned with the assistance of the commission and the services of Myron Hunt, a prominent Los Angeles architect.⁹³

Hull worked closely with Hunt, and by the end of 1923, a definite plan was finally approved for the future development of Yosemite Valley. The new village made possible the elimination of many dilapidated structures and improved the valley from the standpoint of practical operation and landscape character. The plan called for the careful selection of building sites, the park service's approval of all designs, and adherence to an architectural theme that harmonized construction with the natural surroundings. The plan moved the village functions to the opposite side of the valley and arranged an administration building, post office, general store, and studios and shops around a central parking plaza. All the buildings were to harmonize with the natural setting of the valley, and the park service was to approve all plans and drawings.

In 1924, the new administration building was completed. Designed by Myron Hunt, the building was a modest Craftsman structure with a lower story and foundation of concrete faced with boulders, an upper story of shingled walls, and a broad sloping roof supported on exposed log purlins. This building established the particular mode of harmonious "rustic" design to which later buildings in the village would conform. With the subsequent construction of a

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

post office and museum, the nucleus for the new civic center took form.

At Grand Canyon, the National Park Service faced the challenge of fitting new government facilities into the scheme already established by the Santa Fe Railroad and the Fred Harvey Company. On the South Rim, park service buildings were to be coordinated with the large number of prominent buildings already built by the concessionaire. A village character clearly existed with architecture representing a variety of styles. Prominent buildings included the stone Lookout House on the edge of the rim, the pueblo style Hopi House, the El Tovar Hotel with its Swiss- and Norwegian-inspired design and details, a train station of massive log construction, and a number of utility buildings including stables and a power plant. A preliminary plan for an administration or civic group was prepared and a general scheme for the canyon's development worked out. In 1921, Hull designed the park administration building, using a combination of stone and log, establishing a style that would harmonize park service construction on the South Rim with the natural setting and with the concessionaire's buildings. In 1924, Hull and Vint, the Santa Fe Railway engineers, and Fred Harvey officials worked out a comprehensive plan for future development on the South Rim. Myron Hunt also provided advice and assistance. By the end of 1926, the new village plaza was taking form with a new road leading into it, and a new auto camp was praised as one of finest in United States, with a community room, delicatessen, comfort station, and other amenities.⁹⁴

Hull applied his knowledge of landscape architecture and architecture from the beginning of his park service career. He explored native materials from rock to logs and studied pioneer forms such as traditional log cabins and pueblo structures. Hull's career with the National Park Service was a period of experimentation with architectural forms and the use of native building materials and primitive construction techniques that were well adapted to local natural conditions and reflected the region's cultural identity. Although functional and economical, each of his designs was unique in its materials and design. Some of the notable achievements of his park service career were the administration building in Sequoia's Giant Forest, the Falls River Entrance Station at Rocky Mountain, the administration building at Grand Canyon, the entrance building at Zion, and the Lake Ranger Station at Yellowstone.

Several influences outside the landscape program strongly advanced the architectural design of park structures in national parks. Starting in 1924, grants from the Laura Spelman Rockefeller Foundation made possible the construction of park museums and interpretive structures. Herbert Maier was hired by the American Association of Museums to design a museum for Yosemite and, several years later, museums and trailside exhibits for Yellowstone and Grand Canyon. Maier worked closely with Ansel Hall, chief naturalist for the park service, and Hull's office. A decade later, as a district officer for Emergency Conservation Work in state parks, Maier would become the National Park Service's foremost expert on park structures and would have great influence on the design of structures in national and state parks in the Southwest and elsewhere.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Maier's design for the museum in Yosemite Valley both suited the architectural style of Myron Hunt's administration building and boldly forged a new standard for the construction of park buildings. Funded by a \$75,000 grant from the Laura Spelman Rockefeller Foundation and opened in May 1926, the museum was a compromise solution to the problem of achieving harmony with the newly-planned village and the natural setting of a national park. Maier used only indigenous building materials in all visible exterior parts, namely logs, shakes, and stone. Maier called his work a "structural dichotomy." A lower story framed in reinforced concrete and sheathed with rough-hewn granite blocks provided a fireproof vault, and an overhanging upper story made of log framing and hand-cut shakes provided offices. The architect deliberately subordinated the building to its natural setting against the towering granite walls of the valley by emphasizing its horizontality.⁹⁵

An interpretive lookout was constructed at the same time at Glacier Point. A simple shelter with a large rectangular opening for taking in the view, it featured battered stone walls that emerged from the granite outcropping and an overhanging roof. It was a scaled-down and less exaggerated version of Greene and Greene's Oaklawn Waiting Station in Pasadena. Built of native materials and simple design, it was intended to blend into the surface of the cliff where it was located. Functionally, the lookout was the first trailside shelter built in the park and was a direct link with the shelters that Downing and Hubbard urged be placed at scenic overlooks. It represents the origins of an educational program for national parks that drew visitors' away from village centers to the scenic wonders of the park. Despite its lack of architectural sophistication, the lookout was an important prototype that linked park architecture with the nineteenth-century Schoolmaster's Hill shelter of the Olmsted firm at Franklin Park and lookouts built by the Civilian Conservation Corps in state parks such as Davis Mountains State Park in Texas in the 1930s.

The design of park service buildings at Mesa Verde National Park by Superintendent Jesse Nusbaum and his wife, Aileen, explored the idea that park buildings should have a cultural theme suited to the prehistory or history of the park area. Like the work of Mary Elizabeth Jane Colter, the Nusbaums' designs drew on the indigenous architecture of the Southwest and achieved solutions that used native stone and traditional construction techniques. The buildings were at once harmonious with the natural setting and suitable in their cultural allusions. The ruins of cliff dwellers and temples at Mesa Verde National Park, which were the subject of continuing excavation in the early twentieth century, offered ideal prototypes for park buildings. The Mesa Verde buildings--the superintendent's residence (1921), administration building (1923), post office (1923), museum (1923), rangers' building (1925), and community house (1927)--reflected a fusion of indigenous materials and methods of pueblo construction with Spanish Colonial influences. Like their prehistoric antecedents, the Mesa Verde buildings were flat-roofed structures whose walls were rough masonry of relatively evenly sized blocks of local sandstone joined with mud mortar. The roof was supported by peeled timbers called vigas that were arranged laterally and protruded through the outer stone

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

walls. A masonry parapet surmounted each building forming a continuous surface with the load-bearing and slightly battered walls. Distinctive architectural details included corner fireplaces, exposed vigas, latia ceilings, corbeled posts, lintels made from adzed timbers, and decorative grillwork.⁹⁶

Hull encouraged the concessionaires to design facilities that used native materials and craftsman techniques and strove for a harmony of structure and natural setting. Hull, it seems, viewed working with their architects as opportunities to learn from master architects and to work out design principles and techniques for naturalistic construction on a scale larger than that allowed by the meager budget for government buildings. He was greatly inspired by Colter's work at Grand Canyon, directly borrowing her use of log and stone in his own design for the administration building.⁹⁷

About 1923, Hull began to work closely with Gilbert Stanley Underwood, the architect for the Utah Parks Company, formed by the Union Pacific Railroad, which was taking a leading role in developing the national parks of southern Utah for tourism. When Hull moved the landscape engineer's operation to Los Angeles in 1923, it was to share Underwood's offices. In addition to the Zion and Bryce facilities, Underwood designed the Ahwahnee Lodge in Yosemite Valley and later facilities on the North Rim of the Grand Canyon. Hull and Vint continued to work closely with the Underwood firm until 1927, when the Western Field Office was organized in San Francisco.⁹⁸

About 1923, a major change in the design of concessionaires' facilities occurred. At the urging of Director Mather, who opposed the idea of a large hotel at Zion, Underwood came up with a plan for a landscape development that featured a smaller lodge or pavilion with outlying cottages and service buildings. This plan established a design precedent that would be followed for many years. Noteworthy were the architectural design and the comprehensive landscape plan that linked the lodge and cabins, the utility group, and the roads and paths. The lodge was sited far back from the canyon rim against a rocky hillside that provided a scenic backdrop for the centrally located pavilion. A one-way curvilinear drive enabled tour buses and automobiles to approach and depart from the two-story pavilion, which featured a lobby, dining hall, and about 75 guest rooms. Passengers disembarked and entered the lobby through a porte cochère made of massive piers of rustic stonemasonry, the roof of which functioned as a second-story observation deck surrounded by a parapet of stone piers and log rails, from which visitors could view the canyon. The grounds included a broad open meadow, a cactus garden edged with stone boulders, and paths leading to the rim. Standard and Deluxe cottages, fashioned from native pine and stone, were nestled in the surrounding woodland.⁹⁹

Underwood's designs were in keeping with the National Park Service's program for rustic design and native materials, yet advanced the idea of "rustic" into a design idiom that had far-reaching influence on government-built structures and the overall definition of principles of rustic design. Underwood creatively adopted features such as the porte cochère, jerkinhead gables, bands of small-paned windows, elongated dormers, clerestories, truss roofing, and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

massive stone fireplaces. He explored many features of the Adirondack style, the work of the Bay Area architects, and the work of designers of the early park lodges. He achieved "rustic" solutions with modern building materials such as stained and textured concrete and plate-glass windows, and he successfully incorporated into his designs landscape features such as terraces, stairways, stone parapets, loop entry drives, and native plantings. The work of Underwood strongly reinforced and expanded the principles emerging from the Landscape Division's own work. Like the collaboration with Maier, the association with the Underwood firm stimulated and enriched the Landscape Division's inventiveness and expression in the design of park structures and enabled them to work out landscape plans for new developments.

Development of Park Roads

By the end of 1925, a substantial amount of Hull and Vint's time was spent on the construction of roads. The landscape engineers worked with the Civil Engineering Division, then headed by Bert H. Burrell, and the Bureau of Public Roads from the initial on-the-ground inspection of the territory before the road was surveyed to the final approval of the work. A landscape engineer carefully went over the preliminary road lines, suggesting changes to protect landscape features or to take advantage of scenic points previously overlooked. The landscape engineer made a number of visits during construction to review the work and advise on landscape matters, "particularly with the idea of making the finished result the best possible in its relation to the landscape." The landscape engineers also paid considerable attention to the design, construction, and workmanship of the bridges.¹⁰⁰

Funding for roads remained a problem into the 1920s, particularly in Yosemite, where in 1923 only 8 of the park's 138 miles of road had been constructed under congressional appropriations. Roads were narrow, unsurfaced, and exceedingly steep; there were numerous sharp curves, and frequent accidents were reported. Increasing numbers of visitors came to the parks by automobile, placing greater and greater pressure on the National Park Service to make roads safer and increase visitors' access to various points within the park. New entrances into parks were opened as approach highways were built by state highway departments or the U.S. Forest Service. Throngs of visitors entered the parks, requiring new entrance stations, park roads, parking, and campgrounds.

Park road designers endeavored to eliminate the hazardous curves, sharp turns, and steep inclines that characterized mountain roads. Switchbacks, where a road changes direction at a tight angle, were common in early roads such as the Fall River Road in Rocky Mountain National Park built in the 1910s by the state of Colorado. Switchbacks on most roads were gradually replaced by radial curves. Cut-and-fill operations bored into the natural hillsides on one side of the roadway and built up areas of fill on the other to create an even grade. The construction of roads initially relied upon tangents and radial curves. By the 1920s, tangents gave way to curvilinear stretches

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

interconnected with radial curves. By the end of the 1920s, superelevations were being built into roadways and bridges. As the National Park Service gained experience in designing parkways in the East, smooth transitional curves based on spirals and superelevations were introduced, raising the standard of park roads. The National Park Service endeavored to maintain a maximum grade of 5 percent, although as much as an 8 percent grade was sometimes allowed.

The park service's civil engineers focused on the practical and technical details of road construction that included gradient, drainage, excavating, grading, surfacing, and the construction of revetments, culverts, and bridges. Meanwhile, the landscape engineers were interested in aesthetic and scenic concerns, such as the location of the road, provisions for viewpoints and vistas, the external character of structures, and the creation of a smooth flowing road that followed the natural contours of the land.

National park engineers looked to the nation's experts for advice on park development. Major William A. Welch, the nation's foremost park engineer and general manager of the Palisades Interstate Park in New York and New Jersey, visited several parks in 1921 and provided advice on engineering issues from the construction of roads to the development of sanitary facilities. Featured as a model of park development at the 1917 national parks conference, Welch's work, including the dramatic Storm King Road, remained in the forefront of state park work through the 1920s.¹⁰¹

The Columbia River Highway, designed between 1913 and 1922 by Samuel Lancaster, an engineer of the Oregon Highway Department, established the state of the art for building scenic roads in mountainous areas. The Columbia River Highway, originally seventy-four miles in length, featured a 100-foot-minimum curve radius, a 24-foot wide roadway, and maximum grade of 5 percent in its first section. Naturalistic tunnels were carved out of the steep rock embankments that rose from the river; several had arched buttresses that alternated with open galleries to provide the motorist with river views framed by jagged rockwork. Guardrails in a variety of designs and bridges were incorporated into the design. Particularly well known was the series of radial curves that enabled motorists to ascend the steep banks that rose sharply from the Columbia River to Crown Point. Skirting the edge of the national forests and providing access to popular attractions such as Multnomah Falls, the road provided opportunities for recreational development. The U.S. Forest Service built its first campground at Nearby Eagle Creek; and the state of Oregon developed a visitor center and observation tower at Crown Point, and facilities including a lodge, trails, and bridges at Multnomah Falls. The aesthetic and engineering achievement of the road would greatly influence the construction of park roads in the next decade.¹⁰²

The civil engineers relied heavily upon the work of the U.S. Forest Service, which, in collaboration with the Bureau of Public Roads, had been constructing wilderness roads for many years. Their technical specifications, including solutions for log bridges and trestles, cribbing, culverts and retaining walls, dry-rubble masonry, riprap, and wooden guardrails were published annually in *Specifications for Forest Road Construction*. Frost's *Art of Road Making* and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Blanchard and Drowne's *Highway Construction* were state-of-the-art manuals for road engineering, treating subjects such as road gradients and cross sections.¹⁰³

The Bronx River Parkway, constructed from 1913 to 1925, pioneered in the development of scenic roadways by reclaiming land along the riverfront. This development was an effort to clean up unsightly and unsanitary conditions along the Bronx River and protect the river from further pollution while at the same time creating a pleasure drive and network of cross-county roads. It was the collaborative effort of chief landscape architect Hermann Merkel, superintendent of landscape construction Gilmore Clarke, and engineer Jay Downer. Field trips to see this pioneering work were featured at the 1922 meeting of the National Conference of State Parks. By the late 1920s, Vint and Clarke were well acquainted and had exchanged staff for short periods of time to increase their experience. Stanley Abbott and Wilbur Simonson, designers of parkways for the National Park Service in the 1930s, had worked under Clarke in Westchester County before joining the National Park Service.

Park designers adopted many conventions from the English gardening tradition for the design of naturalistic roadways and from the interconnected parks and parkways that the Olmsted firm had built in Brooklyn and other East Coast cities. By 1920, such park and parkway networks were also developing in Buffalo, Essex County (New Jersey), Seattle, the District of Columbia, Kansas City, Memphis, and other cities.

Andrew Jackson Downing's classification of approach, circuit, and service roads of the nineteenth-century pleasure grounds influenced the character and the classification of national park roads. The idea of the circuit road would be extensively applied at various scales in national park design, from Yellowstone's Grand Loop to campground roads. So well did the circular movement of vehicles serve park designers in creating a flow that loop developments occurred at all scales to control and facilitate the flow of traffic, from the headquarters at Mammoth Hot Springs to spur roads to scenic overlooks. The "wye" intersection, whereby intersecting roads came together at a wide angle, was frequently used for branch roads leaving or entering a main road, eliminating the need for motorists to make sharp turns and allowing traffic to flow uninterruptedly along a gradual curving path.

The distinction of roadways for varying purposes and different modes of transportation was an inherent characteristic of nineteenth-century urban parks. Frederick Law Olmsted, Sr.'s emphasis on separate systems for different types of transportation was fundamental to the development of national parks, making it logical to separate motor roads from bridle trails or pedestrian trails and to provide separate network of fire or truck trails and administrative roads. Such separation reduced the visual intrusions presented by other forms of construction and ensured that the sequential experience and pleasure of traveling scenic park roads or hiking wilderness trails remained uninterrupted.

The grade separation, an ingenious device used by Frederick Law Olmsted, Sr., in his arches at Central Park and Franklin Park, was adopted by park

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

designers to carry foot traffic above or below motor roads. At the east entrance to Mount Rainier at Tipsoo Lake, a bridge carrying the Cascade Crest Trail across the approach road became at once a grade separation, a boundary marker between the national park and national forest, and a gate to the park. In Yosemite, visitors on foot or horseback could pass through arched tunnels built into the bridges on the valley floor. This device was also combined with the technique, adopted from the construction of western railroads, of creating a road loop with a bridge at the crossing to make it possible to maintain an easy and gradual grade in a steep valley or pass.

Paramount in designing a park road from a landscape standpoint was locating it in reference to scenery. Downing's principles on creating a sequential experience in which the visitor would pass through spaces of varying character and past picturesque features and then arrive at scenic vistas were central to their recommendations. The success of many park roads lay in their ability to present the splendors of nature. Vista was of primary importance in locating a road, and selecting viewpoints for visitor enjoyment was an important role of the landscape engineer. As stewards of the park landscape, the landscape engineers ensured that significant natural features and scenic qualities would be protected from construction damage as well as from damage related to its location and use. Scenic views, especially those from trails, other roadways, and scenic overlooks, were to remain undisturbed by roads or other forms of development. Where such interference was unavoidable, efforts were taken to blend the roadway into the natural setting and to conceal any construction scars.

In designing wilderness roads, Frank Waugh wrote in 1917 that the landscape designer should utilize to the utmost all the natural scenery, fully developing every good view. The best views were to be opened up and framed by suitable plantings, and inferior views were to be blocked out. Vistas were to have a clear focal point such as a mountain, lake, or waterfall. Special views were to be emphasized by placing seats, turns, or rest houses at the best point of observation. Waugh carried out his own ideas in his work for the U.S. Forest Service. His design for Mount Hood Road, a curving mountain road with a panorama of unraveling vistas and parking turnouts to provide scenic views, is the most complete example of Waugh's own theory. Waugh saw roads and trails as the framework for the entire design of a recreational area, providing transit between principal points in the park and a means of "revealing pleasant scenery." The designer's role was to locate the main points of scenic value, such as fine outlooks, stately groups of trees, and objects of local interest, and to lay out trails connecting these. The angle at which hikers approached scenic features was particularly important. In Waugh's theory of trail design, scenic objects or features were to be viewed straight ahead and at proper distances, while broad outlooks over valleys, mountains, or water, were to be viewed at varying angles to the trail. This was accomplished by giving a "convenient" turn to the trail at the point of view and by widening the trail and providing a stopping place, perhaps with seats facing the outlook. Waugh believed that scenery should be arranged along a trail like a series of themes

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

or motives arranged in "paragraphs" that drew attention to the unique natural features of a variety of landscape types.¹⁰⁴

Henry Hubbard also gave substantial advice for designing roads in natural parks. Roads were to lay gently on the ground, interrupting the natural topography as little as possible. They could be made inconspicuous by concealing them with vegetation and by carefully shaping the roadway and selecting materials. Influenced by the naturalistic gardening techniques that Repton and Downing had espoused and that the Olmsted firm practiced, Hubbard wrote that, in a naturalistic landscape, as far as it is possible, the road should seem to lie upon the surface of the ground without interrupting of shape of the land. The surface of cuts and fills should simulate the natural surface where possible. The slopes of the roadway should appear to have the same character as the undisturbed area beyond.¹⁰⁵

Armed with justifications prepared by park superintendents, Director Mather annually sought increased congressional appropriations for road construction and improvements. Finally on April 9, 1924, "an act authorizing the construction, reconstruction, and improvement of roads and trails, inclusive of necessary bridges, in the national parks and monuments," made possible annual appropriations for park roads and trails (43 Stat. 90). Recognizing the need to reconstruct most of the existing park roads to modern standards, Congress approved the same year a general road program authorizing a total appropriation of \$7.5 million over a three-year period. Appropriations for the years 1924 to 1928 amounted to \$6.5 million; an additional \$2.5 million was appropriated under the Appropriations Act of 1928. The Leavitt Approach Road Act of January 31, 1931, further authorized the park service to spend funds on construction and improvement of approach roads leading to parks but located outside park boundaries. This made possible the improvement of state highways and roads through national forests. By controlling approaches to parks, the National Park Service was able to provide a graceful transition into the park from the surrounding countryside. Such a transition prepared visitors for the park experience and oriented them to an environment where nature dominated.¹⁰⁶

With annual appropriations ensured, each park superintendent developed a three-year plan for road improvements. Under this arrangement, superintendents could program the construction of individual roads in segments and develop a well-coordinated system of circulation that met administrative needs, provided visitors access to the key points within the park, and met the demands of a society increasing reliant on the automobile.

The increased appropriations for road and trail construction and a solidifying relationship with the Bureau of Public Roads, which was under the U.S. Department of Agriculture, resulted in a cooperative agreement for the construction and improvement of roads and trails. The interbureau agreement was signed by the Department of the Interior and the Department of Agriculture on January 18, 1926. Consequently all contracts and surveys were turned over to the Bureau and the Engineering Division of the National Park Service reorganized.¹⁰⁷

The agreement enabled the National Park Service to use the road-building

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

organization of the Bureau of Public Roads to survey, construct, reconstruct, and improve roads and trails within the national parks. This collaboration ensured that park roads would be built or upgraded to modern standards and reflect state-of-the-art engineering. The agreement called upon the Bureau of Public Roads to make every effort "to harmonize the standards of construction" of park roads and trails with those adopted for the roads of the national forests and others that were part of the Federal Aid Highway System and to "secure the best modern practice in the location, design, construction and improvement" of the roads.¹⁰⁸

As part of the initial planning for each project, the National Park Service's landscape engineer cooperated with Bureau of Public Roads engineers in the preliminary investigation of proposed roads and prepared a report on all landscape features of the proposed project. As projects got under way, the bureau's district engineer took charge of the project and with the cooperation of the park superintendent and landscape engineer conducted the survey and prepared plans, specifications, and estimates for the project. These would ultimately be reviewed and approved by the park superintendent, landscape engineer, and National Park Service director. After contracts for particular sections of road and other aspects such as the construction of bridges were announced, the bureau's engineer and the park superintendent would together tabulate the bids, and the award would be made by the secretary of the interior. The work proceeded according to the plans and specifications written into the contracts. Specifications drawn up by the landscape engineers governed those aspects of construction considered landscape issues, such as the protection of natural features or the external design of bridges and culverts.

Landscape protection clearly marked the focus of Hull and Vint's work by this time. At the time of the interbureau agreement, Mather began to call the work of the landscape engineers "preservation of park scenery." The 1920s proved to be a period of experimentation as Hull and Vint adapted the principles of park design and landscape gardening that they inherited from Downing, Olmsted, Hubbard, and Waugh to the special problems of national parks. Such experimentation characterized their role in the design of park roads more than any other aspect of their work.

Increasing road construction brought greater emphasis to the landscape engineer's role as a steward of the national parks. Landscape engineers were to see that roads were located with the least injury to the chief scenic features of the park and that the forests and other natural features along the road were preserved. They were responsible for cutting vistas and for harmonizing culverts and bridges with the landscape.

Protecting natural features and scenic beauty required control over the construction process. The landscape engineers placed restrictions on the burning of debris cleared from the right-of way, including roots, stumps, timber, and brush. They approved the location of borrow pits, quarries, and crushing plants and required the cleanup of stones cast beyond the toe of filled slopes. They also required that stumps outside the road section be removed and that the ragged edges of cut slopes be rounded to appear

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

naturalistic.¹⁰⁹

Scenery preservation also required careful attention to the appearance of the roadway and structures such as bridges and guardrails. From the beginning of the roads program, the landscape engineers were responsible for the materials, methods of construction, and external designs for road features. Roads were generally surfaced with crushed stone or macadam using local stone to harmonize with the soil and rock of the surrounding countryside. All stone, whether to be crushed or to be used in masonry work, was taken from quarries or other sources approved by the landscape engineer. The landscape engineers explored the use of local stone in designing guardrails, the facewalls of culverts, and the side walls and arch rings of bridges.

By 1927, when Hull left the National Park Service, the landscape engineers had made significant strides in applying the principles of naturalistic landscape gardening to the construction of park roads. Naturalism required that roads and trails follow the natural contours in curving lines and that overlooks be located to take best advantage of scenic views and provide access to outstanding natural features without impairing them. It also called for roadside cleanup. Park roads were built with a minimum of cut and fill, and steep grades, sharp turns, and switchbacks were eliminated. Wherever roads would be visible from a distance, either from other places along the road or from scenic turnouts, viewpoints, or trails, they were blended into the scenery. In Yellowstone, for example, the road was carefully carved into the striated rock cliffs in such a way that it merged visually into the natural bands of colored stone. Roads were located where they avoided damage to significant natural features such as outcroppings of stone, groves of trees, waterfalls, and splendid gorges. Manmade structures were carefully constructed of log or stonemasonry and designed to harmonize with the natural setting. This was true of guardrails along the Going-to-the-Sun Highway in Glacier, where low masonry parapets were fashioned from a random arrangement of irregularly-shaped and sized local rock and where the monotony and linearity of form was relieved by crenulations at regular intervals. It was true of the Christine Falls Bridge at Mount Rainier, where stonework blended harmoniously with the natural rocks of the site, and the arch perfectly enframed a picturesque waterfall from several approaches. To achieve this effect at Christine Falls and elsewhere, designers perfected the laying of stone, used weathered stone the color and texture of the surrounding rocks, visualized the scene from several points of view, and used graceful arched forms, not only in the elevation of the bridge but also in the design of the roadway across it. At Christine Falls, the flanking walls were curved to flow continuously with the radius curve of the roadway and a superelevation was built into the side of the deck. This was a triumph of park bridge design, where engineering and the aesthetics of landscape design coincided with superb results.

The Western Field Office, 1927-1933

On October 1, 1927, Director Mather established a field headquarters in San

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Francisco to create a centrally located group of specialists whose job was to advise the director and park superintendents on matters related to park development and management. The field headquarters was divided into several divisions, covering civil engineering, landscape architecture, education, forestry, and sanitary engineering. Under the new organization, the responsibilities of the Engineering and Landscape divisions were differentiated. Engineers did the preliminary programming of roads and trails funds and provided design and supervisory services to parks without resident engineers. The engineers advised park superintendents on the construction of trails and minor roads and on the development of utilities, including water, electricity, telephone, and sewerage. They also were in charge of purchasing equipment needed for building and maintaining roads and other facilities.¹¹⁰

The Landscape Division's responsibilities lay in three areas. First were design services, including the preparation of landscape layouts for developed areas and architectural drawings--both sketches and working plans--for buildings, bridges, and other structures. Next came the preliminary planning and final approval of roads, trails, and pertinent structures in cooperation with park officials and the Bureau of Public Roads in accordance with the "interbureau agreement" adopted on January 18, 1926. And finally, before construction, landscape architects were to review and recommend approval of all building plans by authorized concessionaires, or park operators. All of these projects were to be inspected by the landscape architect to verify that the approved plans and specifications were carried out from a landscape standpoint.¹¹¹

Under Thomas Chalmers Vint, the landscape program expanded into a single, fully orchestrated process of park planning and development based on the principles of landscape preservation and harmonious design. Vint offered the service a varied background of practical skills in architecture and landscape architecture. As Hull's assistant, he had many years of field experience working out practical and aesthetic solutions. He was able to translate the vision of administrators Stephen Mather and Horace Albright and park superintendents, like Owen Tomlinson of Mount Rainier and John White of Sequoia, into plans for interconnecting systems of scenic roads, trails, and developed areas and into drawings that fulfilled the functional and aesthetic requirements of park facilities. He developed a highly successful program of training his staff, assembled from several fields of study and areas of expertise: architects, landscape architects, engineers, and draftsman. He was the "genius" behind a program of master plans on which the National Park Service relied for many years. He devised standards for locating and designing park roads that have had substantial influence on highway construction outside the National Park Service, and he coordinated a servicewide program of landscape preservation and harmonization to meet the park service's difficult twofold mission.¹¹²

In spring 1927, Vint began to build a staff to assist him with the increasing tasks related to the division's multifaceted work, which included architectural drafting, working on campground problems, overseeing construction

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

projects, supervising road and bridge construction, and advising on general matters pertaining to landscape and landscape protection. Due to increasing appropriations the following year, Vint was able to expand his staff of landscape architects, who would reside in the parks during the summer and work on drawings and plans at the headquarters in San Francisco during the winter. In 1930 he set up an Eastern Office, placing Charles Peterson in charge.¹¹³

Vint sought individuals trained in the general principles of landscape architecture and city planning and having a general knowledge of the fundamentals of architecture. Experience in design and construction of buildings and bridges was desirable, while training and experience in nursery work or horticulture was not needed. He also was interested in individuals trained in architecture and city planning with some knowledge of the general principles of landscape architecture and experience in the design and supervision of the construction of residences, lodges, and resort buildings, particularly in log, stone, and rustic construction.¹¹⁴

Fieldwork included supervising construction of general park development projects, such as communities, tourist camps, buildings, roads, and bridges. Fieldwork also involved the general protection of the native landscape, tree removal, and screen plantings. Office work included the preparation of working plans, sketches, and perspectives for architectural work and drawings for government buildings, including administrative and utility buildings, living quarters, shelters, and gateways. Designers were also to review and revise plans submitted by concessionaires for the construction of hotels and camps.

By July 1929, Vint had transformed the Landscape Division into a design office with an increasing emphasis on general planning. Its primary purpose was developing a "logical well-studied general development plan for each park, which included the control of the location, type of architecture, planting, and grading, in connection with any construction project." The division was involved to some degree in all phases of park development. It prepared the architectural and landscape plans for government projects under the direction of the park superintendents, reviewed the plans for tourist facilities to be built by the concessionaires, and reviewed the plans for roads and prepared the architectural plans for bridges constructed by the Bureau of Public Roads. All field staff returned to the San Francisco office as their field schedules allowed; for many, this was during the winter season. There they prepared and reviewed the plans for each year's construction. By mid-1929, he had put in place a training program by which new staff spent a year in the office working on drawings before being assigned to a field position as resident landscape architect.¹¹⁵

Advances in the Landscape Design of Park Roads

Building on the years of experimentation in the 1920s, Vint's office made substantial advances in the road-building program and the Bureau of Public Roads work in national parks in the period from 1928 to 1932. During these years, the landscape architects became more and more experienced in the

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

principles of harmonious design and the design of park roads and structures. Their drawings became more and more detailed, and by 1930, they were providing road engineers and contractors with detailed designs for intersections, parking areas, loop developments, guardrails, and the treatment of road banks. Not only did they design the elevations of the bridges but they also provided detailed diagrams of the arch rings and masonry. Masonry techniques based on standardized principles of construction and adaptable to local stone evolved. Specific practices were developed, such as protecting important rockwork and trees in the vicinity of construction sites and locating work camps in the right-of-way rather than beside the road where they would disturb the roadside scenery and require restoration.

In the field, the landscape architects supervised various aspects of road construction, paying particular attention to the effects of construction on scenery and natural features and to the harmonization of all built structures. The landscape architects approved the site of borrow pits, stone-crushing operations, quarries, and work camps. They gave instructions on site to the foremen and work crews on the proper technique for all masonry work, whether for bridges or guardrails. They approved the stone used based on weathered appearance, coloration, and availability and gave careful directions for the shape and size of stones, the width of mortar joints, and the way that stones were laid to ensure the greatest harmonization possible with the natural setting. The landscape architects also approved the design of parking areas, loop developments, and guardrails and attended to details such as the location and length of guardrails and the trees to be preserved or removed during construction.

In the first several years of park service and bureau cooperation, specifications were carefully worked out for each project, whether a section of road or a group of bridges, and made available to contractors interested in bidding on the work. Vint was determined not only to streamline the process but also to ensure that the advances made in masonry techniques and landscape protection were understood and carried out by road engineers and the contractors.

In 1929, Vint's division developed a standard list of general provisions covering the points that were common to each project and that could be translated into specifications for all projects. The provisions were intended to advance the goals of landscape protection and stewardship. They included many of the improvements that had evolved during the landscape architects' experience in road building since the mid-1920s. They emphasized the importance of landscape preservation, prohibited destructive practices of excavation through blasting, and described the standards for masonry work that had been incorporated in the plans for bridges and guardrails. Innovative was the introduction of type B excavation, which provided for careful rock excavation to avoid damage to outstanding natural features at specific sites. In June 1929, Director Albright approved the new provisions.

The general provisions for all park road projects called for the protection of natural features during construction in several ways. Special care was to

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

be given to the protection of natural surroundings and adjacent campgrounds. Any timber or other landscape features scarred or damaged by the contractor's operations were to be removed, trimmed up, or restored as nearly as possible to their original condition at the contractor's expense. Special procedures for excavating earth and rock were incorporated to minimize the destruction and casting of debris caused by a blasting process called shooting. The contractor was to remove unsightly rock falling outside finished slopes. Contractors were required to limit the development of temporary trails and roads. They were allowed to clear a margin of land only as wide as the road, and trees and bushes were to remain uncut along the shoulders where they protected the surrounding woodlands or meadows from damage during construction. Trees and shrubs of "value to the appearance of the roads" were to be preserved. All holes left by removal of stumps and roots were to be back filled. Borrow pits were to be located in areas not visible from the completed road.¹¹⁶

Particularly significant were the new specifications for type B excavation, which Vint and his staff developed in consultation with bureau engineers and a representative of the Dupont Powder Company. These specifications clearly prohibited practices such as block holing, in which gopher- and coyote-sized holes were drilled and planted with powerful explosives, which broke apart large masses of rock and earth when detonated, created extensive rock falls and damaged the natural environment and scenery. The specifications called for the use of gentle, controllable techniques for breaking surface boulders or rock fragments in designated areas to prevent damage to surrounding objects and to eliminate the scattering of rocks, stumps, and other debris outside finished slopes. In the form of a checklist, the specifications were incorporated into the 1929 contracts for new work at Lassen, Yellowstone, and Rocky Mountain and all future contracts. This gave the landscape engineers a mechanism for protecting significant natural features and vistas which would have been damaged or lost by normal methods of excavation.¹¹⁷

One of the most significant advances made by the Landscape Division in the design of park roads was the naturalistic treatment of the earth cuts and filled slopes created during construction. Although Hull had called for the finishing of the banks alongside roads by shaping them into slopes in the early 1920s, it was not until 1929 that a technique for rounding and flattening slopes was developed and institutionalized. That year, Vint's office issued four cross-section drawings for the slopes of earth cuts and fill areas along national park roads under construction by the Bureau of Public Roads. The diagrams introduced a technique to round the tops of cut and fill slopes and to flatten the slopes so that they attained a proportion of 3:1. Slopes were not to exceed a ratio of three feet in depth for every one foot of elevation. This technique would become a major characteristic of park roads and parkways. It made it possible to ease the disturbed slopes gradually into the surrounding landscape and helped reduce erosion. Once graded in a graceful slope, the banks would be able to recover vegetation naturally or could be sodded and planted so that they blended into the natural vegetation of the surrounding woodlands or hillsides. The idea of creating continuity between a roadway and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

the surrounding landscape by flattening the slopes was first developed by John C. Olmsted in an article in *Garden and Forest* in 1888, where he instructed readers on how the length and height of the concave and convex surfaces of a slope following an ogee curve could be manipulated to adjust a roadway to the surrounding topography.¹¹⁸

In 1931, Vint had issued more advanced diagrams for the treatment of slopes. These illustrated typical cross sections for rounding slopes, twenty feet in depth or less, and included directions for warping the ends of the cuts to enhance the naturalistic appearance of the slopes. Adherence to the diagrams became a specification in all new contracts. The Bureau of Public Roads readily accepted the designs and put them into use throughout the national parks. Within four seasons of use, the treatment was adopted by several other road-building agencies and was being widely used in national forests and other federal lands.¹¹⁹

The Landscape Division's technique for treating slopes had many advantages. First of all, by rounding the edges of cuts, road builders could erase the most conspicuous trace of human intervention--the ragged, unnatural line of the cut. Flattened into proportions more similar to the natural angle of repose, the slopes could provide a graceful transition from the natural woodland or meadows beyond the road to the roadway itself. From a practical standpoint, slopes that had been rounded and flattened were less vulnerable to erosion and more quickly able to recover vegetation by natural means, through wind dispersal of seeds or through propagation from the surrounding woods or meadows.

The treatment of the slopes of park roads continued to be studied and improved. By 1932, the results of the rounding and flattening of cut slopes were apparent from decreasing maintenance costs and improved appearances. The division further examined the treatment of road shoulders, width of slopes, and size and types of ditches. Designs for drop-inlets, ditches of crushed stone and loose gravel, and other solutions were introduced in the early 1930s to improve the drainage along park roads. The Landscape Division continued to make improvements in the cross sections for park roads, refining the treatment of rounding and flattening the slopes. When revised specifications were issued in 1938, the ratio had been increased from 3:1 to 4:1, flattening the slope to an even greater degree. These new designs went hand-in-hand with the advances made, primarily through parkway development, in the use of transitional spirals and superelevations to create graceful curving roadways along steep inclines.¹²⁰

Although many slopes quickly reverted to natural conditions, erosion on newly cut and shaped slopes was a constant concern. At the same time that Vint's staff was developing ways to blend road banks into the scenery by rounding and flattening the slopes, they became interested in the possibilities of speeding up and controlling the process of revegetation by planting or sodding the finished slopes. Practical concerns about erosion, maintenance, and visibility were coupled with an interest in returning the roadsides to a scenic and naturalistic appearance. Planting the roadside added to their beauty and created a pleasing sequence of effects, particularly where there

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

were no distant views.

The park service's interest in treating the slopes of park roads coincided with a growing interest nationally in planting highways for scenic beauty. Articles on the topic by noted landscape architects P. H. Elwood, Jr., Jens Jensen, Warren Manning, and Frank Waugh appeared in *Landscape Architecture* in the late 1920s and early 1930s. Several states had extension programs or state highway programs that performed planting as a form of beautification. Since the mid-1910s, Illinois had promoted planting native trees and shrubs alongside rural roads to improve the beauty of the countryside and "restore" the character of the native prairie. Jens Jensen had designed the planting for the ideal section of the Lincoln Highway in the Midwest, and Massachusetts, Pennsylvania, and several other states were planting flowering shrubs and other plants along highways. Henry Hubbard advised readers that slopes be held in place by roots of vegetation or by boulders and informal plantations of trees and shrubs to be planted so that the road appeared to run through preexisting groups of foliage. In "Ecology of the Roadside," published in *Landscape Architecture* in 1931, Frank Waugh applied ecological principles to the natural growth and planting of roadside vegetation and pointed out that the differing conditions that existed due to the way roads were constructed resulted in a great and delightful variety in roadside vegetation.¹²¹

National park landscape engineers began to give attention to vegetation along park roads in the late 1920s. Among the first planting efforts were experiments conducted in 1927 along the banks of new roads in Mount Rainier, where brake ferns, cuttings of salal, and cuttings of thimbleberry and common huckleberry were planted. The expanding interest in roadside planting coincided with the National Park Service's 1930 policy excluding all exotic seeds and plants from the national parks, with the exception of nonnative grasses, which were impossible to control and already abounded in parks. Roadside grading and planting became one of the most important and widespread activities of the Civilian Conservation Corps in national parks. In many parks, experimental plots for grasses, perennial herbs and wild flowers, vines, and shrubs were maintained, some in conjunction with the natural history programs and museum gardens.¹²²

In many locations the banks of new roads rapidly recovered a ground cover through natural seeding. In others planting and stabilization were necessary to control erosion. After being flattened and rounded, slopes were planted with the seeds or seedlings of native grasses and herbaceous plants, including wild flowers. Experiments were often conducted before planting, from seeds collected locally in previous seasons. Temporary log cribbing was constructed on particularly steep slopes subject to erosion. To catch runoff, gutters were dug and in some places lined with stones. Rocks were also artistically embedded in slopes for stabilization and erosion control.

At Yosemite, serious erosion problems in the cuts along the Wawona Road and difficulty in getting vegetation to take hold naturally led to a cooperative study with the park's natural history program. Dr. Frederic E. Clements of Carnegie Institution, who had done extensive research on plant ecology and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

operated a field station in Santa Barbara, California, directed the program in the early 1930s. Various experiments were conducted involving seeding and sodding slopes, installing wooden cribbing to hold seedlings in place, and planting creeping vines and other plants in the interstices of rocky slopes. Techniques were developed for erasing the line between the natural woodland or meadow and the cut-and-fill slopes by clearing vegetation before construction along an irregular line and replanting likewise with species appropriate to the area. Sections of the Yosemite Museum's garden were set aside for experiments. Enrollees from one of the park's Civilian Conservation Corps camps carried out the work of collecting seeds and planting the slopes.

By 1930, roadside cleanup was funded under annual appropriations for roads and trails. This work included naturalizing roadsides after construction by planting, screening undesirable views, opening scenic vistas, clearing dead and decaying timber from the roadside, and placing telephone lines underground. Cleanup also included small-scale improvements at parking turnouts and roadside springs, such as water fountains, curbs and sidewalks, and benches.¹²³

As more and more attention was given to vegetation, so too were ways sought to blend the newly planted banks into the natural surroundings. A technique of bank blending emerged in which trees cleared for the construction of roads were cut in swaths having an irregular uphill or downhill edge line. This technique eliminated the artificial appearance of a straight, regular line and created a wavering, curving line that appeared naturalistic. Shrubs, ground covers, and woodland plants could be planted along these edges in a natural succession, further erasing the line between planted areas and natural areas. Hazards from falling limbs and the risk of obscuring the motorist's vision generally made saving trees within the road cross sections impractical. It was far better to clear the trees and replant the new slopes, the location of the road having been selected to avoid trees or rock formations of importance.

Among the many conservation projects carried out in national parks by the Civilian Conservation Corps in the 1930s, the sloping and naturalization of road banks left by cut-and-fill operations during road and trail construction was one of the most important and widespread. It had an important role in controlling slope erosion as well as lasting value for beautification. Landscape architect Davidson recognized the practical and aesthetic value of this work in 1934, when he stated that the stabilization and naturalization of the cut-and-fill scars resulting from road and highway construction was the most important work carried out by the Civilian Conservation Corps in the national parks.¹²⁴

The contouring and naturalization of road banks had many useful applications for other aspects of design in both national and state parks. These include the rounding, flattening, and planting of slopes alongside trails, at parking areas and overlooks, and on other embankments where a gradual and naturalistic transition between a developed area and the natural park surroundings was desired. It was particularly valuable where practical necessity required the creation of a flat, level plaza in an otherwise naturally contoured area. This technique would also prove invaluable in stabilizing streambanks and enhancing

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

their aesthetic appeal by reducing erosion and the buildup of debris in snags. It would also add to the beauty and naturalistic character of the shorelines of the newly constructed lakes developed for recreational purposes in state parks and recreation demonstration areas in the 1930s. This contouring technique, combined with naturalistic plantings, contributed greatly to returning construction sites and other disturbed areas to naturalistic appearances.

The park service's advances in the treatment of slopes along new roads represents an important stage in the evolution from the English gardening tradition to the present-day standards for highway design. By translating John C. Olmsted and Henry Hubbard's ideas for treating slopes into modern design theory that was institutionalized by the Bureau of Public Roads, national park designers contributed substantially to twentieth-century landscape architecture. Their innovations in treating the banks of roads would have lasting influence on the character of modern highways, as well as on the development of roads in national parks, national forests, and state parks. Because the techniques proved economical and reduced the potential for erosion, they were adopted to control erosion along streams and embankments in park areas other than roads. By blending and warping slopes and ensuring the regrowth of vegetation, the designers of national park roads also drew attention to the natural character and inherent beauty of native vegetation.

Overlooks were an important feature of park roads, providing a stopping and resting place and affording visitors spectacular, and often panoramic, views. They ranged from simple widened areas along the road where traffic could pull over and stop to larger terraces accommodating sizable parking areas with curbing, sidewalks, and protective guardrails. They could be combined with paths and trails that allowed the visitor to ascend a peak or outcrop for a better view or to descend to a scenic waterfall or gorge. Overlooks on park roads were derivatives of the terrace form used by landscape architects to present a view. Terraces offered designers endless possibilities for presenting views to the best advantage. The first overlooks were designed on existing plateaulike promontories of land. They were bounded by curtainlike parapet walls that conformed to the natural shape of the promontory. One of the earliest overlooks of this type was the Sunrise Ridge Loop (1929-1930) on Mount Rainier's Yakima Park Road. It provided both an aesthetic and engineering solution along a steep incline where it was necessary for the road to shift direction to continue smoothly uphill. The overlook was essentially a switchback opened up to form a sweeping loop and afford panoramic views and a stopping point along the incline. The center of the loop was reserved for parking. Visitors crossed the road to the viewing area where a stonemasonry guardrail separated them from the steep slopes beyond the overlook. The monotonous line of the guardrail was relieved by crenulating piers that echoed the majestic form of the nearby mountain peak.¹²³

The idea of a walkway with a protective guardrail that followed the natural contour of the land was applied to curvilinear paths and trails along scenic rims such as the South Rim of the Grand Canyon or Rim Village at Crater Lake. Guardrails of masonry piers and log cross timbers were installed as early as

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

1920 along the Canyon of the Yellowstone. By the late 1920s such structures were called promenades and equipped with viewing bays, water fountains, and dust-free walkways that connected with parking areas, nearby buildings, and nature trails. Masonry and log guardrails, following the specifications used in road projects, were also used in precipitous locations along hiking and bridle trails, such as the tunnel approach along the Ptarmigan Trail in Glacier National Park.

The Wawona Tunnel at Yosemite, constructed in the early 1930s, represents the most ambitious precedent for creating an artificial terrace. Here the terrace was created by fill excavated from the 4,200-foot tunnel, shaped into a naturalistic curvilinear form, and retained by a hand-laid revetment wall of weathered local stone. The terrace was separated from the roadway by an island of plantings that helped control the flow of traffic on and off the road. It was bound by a curtainlike masonry parapet of local rock that was separated from the parking area by curbing of roughly cut stone and a sidewalk. Depending on their location, such artificial terraces would either use a dry-laid retaining wall or be gradually sloped and planted to adjust the fill to the surrounding terrain.

Many variations of two basic types--those following the natural contours of a site and those naturalistically created from earth fill--were built along roads in both eastern and western parks. The most extensive development of scenic overlooks occurred in the park drives and parkways of the eastern parks, particularly Shenandoah's Skyline Drive and the Blue Ridge Parkway of the 1930s, where scenic overlooks and vistas at frequent intervals became an integral and essential aspect of the park experience and offered visitors a sequential panorama of spectacles and scenery.

Although the landscape architects had collaborated on the location of roads and the design of bridges and guardrails since 1920, in 1928 they began to design parking areas and loop developments as well. These loop developments became characteristic of the park road systems and would have many applications in the overall design of national and state parks. Derived from the circular drives of pleasure grounds and estates in the English gardening tradition and functioning like the traffic circles of urban parkways, a loop development made it possible to lead automobiles on and off a main road without altering the flow of traffic and without introducing right angles and tangents into the design of a road. Such a device allowed designers to divert traffic for scenic or other purposes. In the case of parking areas at overlooks or campgrounds, they allowed traffic to return to the main road without stopping, backing up, or making sharp turns. Loops were often developed as side or spur roads leading to important viewpoints or to parking, sidewalks and paths, and comfort facilities. A loop was incorporated in the design of the Yakima Park Road to transform an inevitable switchback into a lovely and spectacular viewpoint on Sunrise Ridge, where in clear weather one could see north to Canada and south to the Cascade Range of Oregon. Gilmore Clarke used the loop to channel traffic through Mammoth Hot Springs and to form the nucleus of his master plan for this heavily trafficked area of Yellowstone. Park designers adopted it for

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

campgrounds and picnic areas as well as for parking areas adjacent to scenic points of interest, such as Bridalveil Falls in Yosemite and Artist's Point at Yellowstone.

Vint's 1929 general provisions also included detailed specifications for the naturalistic masonry construction of walls, bridges, guardrails, and the headwalls of culverts. Naturalistic stonemasonry was one of the most significant characteristics of national park roads. During the 1920s, National Park Service landscape architects Daniel Hull and Thomas Vint experimented with stonemasonry techniques and developed specifications for stonemasonry guardrails, culverts, retaining walls, bridges, and other road structures that harmonized and blended with the natural setting. Park bridges, while concrete in construction, had carefully designed stone arch rings and stonemasonry veneered walls, spandrels, parapets, and piers. They consequently endeavored to instruct the engineers and contractors of the Bureau of Public Roads on carrying out these techniques in the field. Specifications were written into contracts and were listed on the drawings for bridges and guardrails beginning in 1928. Standard designs with written specifications were issued for guardrails, culverts, and retaining walls and were to be used in all projects.

The success of harmonization depended primarily on finding a source of natural stone that had the same coloration and character of the natural rock outcroppings of the site where the bridge or guardrail was to be constructed. Harmonization of stonemasonry road features also depended on the exposure of weathered and moss or lichen-covered surfaces, the avoidance of right angles and straight lines in the cutting and arrangement of stones, the integration of battered stone walls into the contours of adjoining slopes and rock formations, and the curvature of the roadway and adjoining walls to follow natural contours.

The nature of manmade stonework directly influenced the extent to which a structure appeared naturalistic and blended harmoniously into the natural setting. The random pattern, variegated natural colors, and irregular lines that resulted from using natural boulders or exposing the weathered surfaces of split stones and from deeply incising mortar joints created a camouflaged surface. When viewed from afar, the artificial rockwork was indistinguishable from the natural outcroppings from which it emerged. In bridges, the stonemasonry was a veneer anchored to the concrete core and fashioned to give the bridge the rustic appearance of a stone bridge that emerged naturalistically out of the natural setting of a boulder-laden stream or rocky gorge. The stonemasonry specifications worked out by Hull and Vint represented a pragmatic twentieth-century application of the nineteenth-century principles for picturesque rockwork that Andrew Jackson Downing, Henry Hubbard, and Samuel Parsons had promoted.

The special provisions for the stonework in guardrails and bridges developed by Vint's office followed the general principle that straight lines and right angles be avoided in naturalistic design. They required that the resident landscape architect select the source of the local stone to be used and prescribe the size, shape, and placement of the stones. They required that

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

finished stonework "present a good architectural appearance" and that rubble masonry be constructed by experienced workmen. Larger stones were to be placed at the base of the guardrail or bridge, and extra large ones at the corners. Only weathered and moss or lichen-covered surfaces were to be exposed, perpetuating an aesthetic quality of the rustic that had come from Downing and was promoted by Hubbard and Parsons. The nesting or bunching of small rocks was to be avoided. Stones were to be laid in courses in such a way that no four corners were contiguous, thus ensuring a random, irregular, and informal appearance. Joints were to be angular and no greater than one inch wide. Guardrails were to conform to standard plans and no joints in the top course were to be parallel with the horizontal line of the structure. The top of exposed walls was to be uniformly even with variations up to one-half inch to avoid the appearance of a straight line. The provisions also required that drainage openings, called weep holes, be included in all stone walls.¹²⁶

In the national parks, both log and stone were used in the construction of guardrails designed to harmonize with the natural setting. Customarily log guardrails were built in forested areas, and masonry ones were built in open, rugged, steep, or mountainous areas.

Several designs for stonemasonry guardrails had been developed in the mid-1920s for work on roads such as the El Portal Road in Yosemite and Going-to-the-Sun Road in Glacier. Guardrails were also used along trails such as the Ptarmigan Trail in Glacier and the promenade at Crater Lake's Rim Village. Eighteen inches high, the walls were designed to protect visitors, whether in automobile, on horseback, or on foot. The same attention to detail that marked the stonemasonry of park bridges was carried over into the designs of walls that ensured both safety and harmonization. The irregularity of the stonework pattern, the avoidance of right angles and straight lines in the setting of stones, and the elimination of parallel joints along the top course provided a camouflage effect whereby native stone blended with the surrounding setting. Functional features for curbing, drainage gutters, and sidewalks were incorporated into the designs for the basic guardrail.

Guardrails were essential for public safety along steep inclines of roadway and also protected visitors at overlooks. They were the counterparts of the parapets described by Henry Hubbard and Theodora Kimball in *An Introduction to the Study of Landscape Design* as an essential component of terraces. Of the many types suggested and commonly used in public parks--balustrade, pierced wall, post and panel, lattice log construction, and others--the park service designers settled upon two simple types: a malleable, masonry curtain wall of native stone and a more rigid and less permanent log structure of roughly hewn log posts and cross rails.¹²⁷

Early in 1928, Vint issued standardized designs for six types of stone guardrails and five types of wood-and-log guardrails for National Park Road projects. These were further refined a year later. Drawn by Davidson and approved by Vint, the sheets included designs for six stone guardrails and seven log or wood guardrails. The designs gave patterns for the arrangement of logs or the placement of stone in measured plans, elevations, and sections.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

They were based on the successful designs that had been developed in the mid-1920s for roads such as Glacier's Going-to-the-Sun Highway, Yosemite's El Portal Road, and Mount Rainier's Yakima Park Road.¹²⁸

Rusticity, irregularity, and native materials marked the overall character of stone guardrails. The designs were simple and consisted of a solid wall without the coping, openings, or ornamentation characteristic of their urban counterparts. Masonry was laid in such a way that straight lines and right angles were avoided and the qualities of continuity, irregularity, and randomness dominated. The lines of demarcation between courses were obscured by the irregular shapes and moss- and lichen-covered surfaces of the stones and the deeply incised mortar. The walls retained the random character and rough, irregular forms of naturally found boulders or weathered outcrops. Most of the designs were variations on masonry walls in which the stones were irregular in shape and laid horizontally.¹²⁹

The basic designs made standardization possible while allowing for a number of variations for different field conditions, uses, and needs. Some were combinations of walls and curbs with space for sidewalks or planting beds. Others had end buttresses or wide crenulating piers, five to six feet in length, spaced at six- or twelve-foot intervals to avoid a monotonous line and add to the overall irregularity of the linear surface. The end walls of others were flared or battered to suit local field conditions. Within the standard set of proportions for eighteen- and twenty-four-inch walls, irregularity and variation were encouraged. Certain rules of joining were established to ensure informality of design and harmonization by blending. The standard designs made it possible for Vint and his staff to specify on master plans, contract specifications, and drawings the type of guardrail suitable for particular locations within each park. In the 1930s, it became standard practice to include a sheet in the master plans for each park showing the guardrail designs recommended for the park; these included diagrams for treating the slopes, culvert designs, and various techniques of joining and cutting logs for construction.¹³⁰

To ease the monotony of long linear expanses of guardrail, the National Park designers introduced crenulating piers. In this they followed Hubbard's advice that where a long straight run of terrace wall might become monotonous, it be "broken by projections which offer particularly good viewpoints and which serve some subordinate purpose of their own as objects in the design." The crenulating piers became a distinctive aspect of the masonry work of the National Park Service. They appeared along many park roads and varied from Davidson's "mountain" form at Mount Rainier to broader, more lozenge-like horizontal forms along Rocky Mountain's Trail Ridge Road.¹³¹

When Charles Peterson came east to head the Eastern Office of the Landscape Division in 1930, he adapted the standard plans to the more gentle topography and geology of the eastern parks such as Shenandoah and the Great Smoky Mountains. Although the features of the roads of Great Smoky Mountains National Park followed the designs of the Western Field Office, greater variations and more architectural features appeared in the design of the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

guardrail, bridges, and other road structures that Peterson and his staff designed for the park in 1932 and 1933. These established a "style" of stonemasonry that was followed in the design of the park's roads in the 1930s and 40s. In the East, Peterson was strongly influenced by the 19th century Olmsted parks, the eastern parkways under Gilmore Clarke's direction in Westchester County in New York, and the George Washington Memorial Parkway being constructed in Virginia at the time. At this time, Peterson was also designing the Colonial Parkway between Jamestown and Yorktown, where he introduced brick stonemasonry and details such as moulded coping rails, stringcourses, and buttresses following the brickwork and historical prototypes found at Williamsburg and the Tidewater region. Unlike the bridges of the western parks, the stonemasonry of the bridges and similar road structures in Great Smoky exhibited a greater proportion of rectilinear shaped stones laid horizontally and mortar joints that roughly followed horizontal and vertical lines. Design features such as string courses and buttressing piers were also introduced. Despite these differences, the structures achieved harmony with the surroundings of boulder-laden streams, forests, and steep rocky slopes and met the specifications set by Vint's office several years earlier.

Stone curbing and, at overlooks, sidewalks were integrated with stone guard walls to form a single unified design. These improvements had important applications in the New Deal era, when labor and funds became available to improve park villages and scenic attractions. Made from local materials of stone and log, naturalistic curbing and sidewalks began to appear at parking areas, overlooks, ranger stations, museums, and other park buildings. Curbing of a single type was installed throughout park villages such as Grand Canyon Village and Yosemite Village. Rustic curbing, made from unfinished, peeled and knotted logs or roughly cut native stone, was installed to bound parking areas. Curving paths were graded and paved with crushed stone and gravel from native rock. Edging of native stone or rough-cut peeled logs laid end-to-end was installed along many pathways in an effort to keep visitors on the designated pathways. These improvements greatly improved the appearance of park areas and reduced the wear and tear of traffic on the fragile natural environment. At Yosemite Village, boulders embedded in the earth in the mid-1920s to delineate the parking plaza and valley roadways, were removed in the 1930s and replaced by continuous sections of partially embedded log curbing that were less conspicuous.

In the early 1920s, the landscape engineers took part in the design of bridges along park roads. By this time, log, concrete, steel, and masonry construction had been used in various parks. Leaving technical aspects of construction to civil engineers, the landscape engineers were concerned with the suitability of materials and design for natural sites, the workmanship of masonry or logwork, and the degree to which each bridge harmonized with its setting.

Each vehicular bridge in the national parks was designed as a unique project, although by the end of the 1920s, a number of standard types and common characteristics began to emerge. Designers based the plans for each

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

bridge on its specific site and location in an effort to meet its functional needs and to harmonize it with its natural setting. Not only did topography and setting vary, but the distances spanned to carry roadways also varied. Arched bridges of stone-faced concrete construction abounded but were not always appropriate given the demands of function, engineering, or landscape. Designs using steel, logs, and even stained concrete were developed for special sites. Modifications occurred as bridges were designed to transport bridle trails or allow foot or bridle trails to pass underneath the roadway. As they did for other structures, landscape engineers made great efforts in the design and workmanship of logwork or stonework to make the bridges appear to emerge naturalistically from the earth or natural bedrock and to harmonize with the natural setting.

The form of the stone arch bridge, inspired by the romantic English prototypes and by Hubbard's illustration of the Scarborough Bridge at Franklin Park, went through an important engineering and aesthetic evolution in the 1920s. This transition is evident in a comparison of several examples beginning with the Yosemite Creek Bridge in 1922 and ending with the White River Bridge at Mount Rainier in 1928. The Yosemite Creek Bridge was one of the earliest masonry-veneered bridges designed by one of the landscape engineers, in this case, Daniel Hull. Voussoir stones were dovetailed into the concrete and held in place with crossbars and a central longitudinal bar. It followed a simple arched form with rectangular buttressed piers at the four ends (where the roadway flared). Stones were rectangular in shape and varied in size so that an irregular pattern of horizontal and vertical joints resulted. The parapet was surmounted by a coping of regularly sized and placed stones that were tied into the buttress ends, which had lanterns.¹³²

Two Mount Rainier bridges, those at Christine Falls and nearby Narada Falls, illustrate the milestone achieved by the Landscape Division in the design of bridges about 1926. These were among the first park bridges to follow the radial curve of the roadway and to incorporate the guardrails, buttresses, spandrels, and arch into one continuous and slender curvilinear form. Not only did the stone-faced bridge blend physically and visually into the natural rocky site, but the Christine Falls arch also enframed the nearby falls and created a scenic and spectacular downhill approach. This bridge incorporated a superelevation and was at once a part of the natural scene and a harmonious manmade element.

In 1928, the Bureau of Public Roads assigned the design of bridges to its San Francisco office, making it easier for the Landscape Division to collaborate on the architectural features of road projects. At this time, Vint's office began incorporating architectural sheets and detailed specifications for the stone facing, arch rings, masonry, and other architectural features in the working plans for each bridge project. Engineers and foremen could work closely from these detailed drawings. Such detailed drawings were produced for the White River and Klickitat bridges in Mount Rainier National Park, which showed the approximate size and shape of the facing stones and included "extracts" for the masonry specifications for the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

stone facing of the concrete walls. So important were the size and shape of the voussoirs that the Landscape Division made large-scale drawings of the arch ring and provided instructions that the voussoir stones were to be quarried to the approximate face dimensions shown on the drawing. On site during the construction, landscape architects erected sample walls to which workmen could refer throughout construction. The detailed drawings and improved field procedures resulted in improved workmanship and appearances of stonemasonry veneered bridges.¹³³

By 1931, Vint considered his office's best designs to be the Christine Falls, Frying Pan, Klickitat, White River, and Tahoma Creek bridges in Mount Rainier; the Happy Isles, Clarke's, and Trail bridges in Yosemite; the Swiftcurrent Bridge (designed by Fine Arts Commission member Ferruccio Vitale) in Glacier; the Log Bridge in Rocky Mountain; and the Lower Pine Creek and Virgin River bridges in Zion. When Vint assembled a portfolio of representative park structures in 1932, he included only one design for a bridge--Mt. Rainier's White River Bridge.

Culverts were an essential feature of park roads. Carrying streams underneath roads and trails without interrupting the natural flow of water, they abounded in mountainous and canyon-like areas. Important in protecting the natural landscape, they also required designs that harmonized with the natural setting. In 1928 Vint's office issued "Standard Architectural Details for the Headwalls for Culverts," a sheet of drawings that could be followed in most situations. The sheet included eight designs for masonry headwalls. The four principal designs based on arched openings had detailed specifications. Weathered stones were to be used and no freshly broken stones were to be exposed. Stones were to be six to eight inches high and eighteen to forty-eight inches long. All stones were to be laid with their larger dimension horizontal, and no four joints were to come together. All arch ring stones were to be shaped to the approximate face dimensions shown on the drawings. Mortar joints were to be roughly one-to one-and-a-half inches wide; they were to be pointed to a depth of one inch to give the appearance of a rough and irregular surface. These specifications clearly drew special attention to the depth of mortar, irregular lines, and weathered surfaces. Variations on the culvert headwall used both arched and stepped parapets and jack, pointed, elliptical, and round arches. The headwalls of several designs were battered to fit into adjoining slopes. In addition to arched forms, several designs showed simple headwalls of post and lintel construction with rectangular openings. The simplest was a stone housing for the extended end of the pipe. Specifications were included on the plans. They called for the use of weathered stones and prohibited the use of round stones or the exposure of freshly cut stone.¹³⁴

Tunnel construction in the national parks where slopes were too steep to carry a road drew heavily from nineteenth-century railroad engineering. Of concern to the landscape engineers was the character of the portals, which visually connected the tunnel with the natural surroundings of the park. The earliest tunnels in the national parks imitated the arched openings of caves or

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

rock outcrops that formed natural bridges. Such natural features held great romantic appeal for nineteenth-century travelers and were absorbed into the picturesque imagery of the wilderness. Formations such as Arch Rock in Yosemite and Crystal Cave in Sequoia were subjects of popular interest. It is not surprising that the naturalistic arched form was introduced in the portals for artificial tunnels along the Columbia River Highway in Oregon. Here motorists traveled through rough arched openings carefully blasted out of the natural bedrock and cliffs to simulate nature's handiwork. Longer tunnels had a gallery of openings through which travelers could catch glimpses of scenery.

From a landscape standpoint, by creating tunnels through buttresses of hard rock, road designers could avoid extensive blasting and the resulting disfigurement of the rock cliffs. By giving the openings the naturalistic character of a cave entrance, the designers harmonized the tunnel with the natural scenery and enhanced the picturesque qualities of the road. Tunnels were common on steep rock inclines such as the transmountain roads in Glacier Park. Road builders carved such tunnels to avoid extensive excavation and to keep down the amount of material that once removed would have to be placed nearby or transported away. Portals were hewn out of the natural rock, adding to the rustic character of the landscape. In the 1920s, tunnels with natural rock portals were incorporated in early park roads, such as the Going-to-the-Sun Highway in Glacier National Park, and on park trails, such as Glacier's Ptarmigan Trail. They appeared at the approaches to the Hetch Hetchy Dam in Yosemite and the Kaibab Suspension Bridge (1928) in Grand Canyon. Even after masonry portals were introduced in the late 1920s, the idea of viewing galleries remained popular. The Zion-Mount Carmel Tunnel (1930) in Zion National Park was built with a gallery of viewing bays from which motorists could view the spectacular scenery.

As tunnels increased in length and were excavated from various types of rock, the desirability of leaving an exposed rock arch at the entrance was ruled out by practical factors such as the nature of the local stone or difficulty in attaining a naturalistic arch. Techniques for staining concrete portals or facing them with stonemasonry to appear rustic or naturalistic emerged. The portals of the Wawona and Zion-Mt. Carmel tunnels were among the first to incorporate new techniques. The aesthetic approaches to stonework that had been explored in the construction of bridges and culvert headwalls were carried over into the construction of tunnel portals. Weathered stone was used to form arch rings for the portals and was laid up in random, irregular, and rough courses to abut the surrounding earth and natural rock. The exposed rock lining of tunnels would, for practical reasons, give way to concrete linings and carefully designed drainage systems. Problems with water seepage, causing serious freezing of roadways inside the tunnels in the winter, necessitated the installation of concrete liners.

In the early 1930s, both the Western and Eastern field offices were exploring the use of naturalistic stonemasonry in the portals of the tunnels on park roads. The most naturalistic portals were those where arched entrances had been excavated out of the natural outcroppings and left in a naturalistic

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

condition unreinforced by concrete and stonemasonry. Where local stone and other conditions made reinforcement necessary, concrete portals were built at tunnel entrances and efforts made to blend them into the natural outcroppings through staining or veneers of stonemasonry. Concrete portals were installed at the Wawona Road Tunnel in Yosemite and the surrounding rock stained with a mixture of lamp black and linseed oil to disguise the recently cut rock. On the Zion-Mt. Carmel Road in Zion, stonemasonry was veneered to the concrete portals. Of the early experiments, one of the most successful set of portals to achieve a harmonious synthesis between the natural outcroppings and stonemasonry by merging the stonemasonry into the surrounding rock was incorporated in the design of the lower tunnel (Tunnel 2) on the Newfound Gap Road. Designed from a preliminary sketch (1933) by Charles Peterson, the portals featured stonemasonry veneer walls and an arch ring of native stones each cut to a specific shape and size.

Yosemite's Committee of Expert Advisers became involved in the planning for a route to connect Yosemite Valley with Glacier Point by way of the new Wawona and Glacier Point roads, which intersected at the Chinquapin Intersection. Although they recommended that a road of a reasonable grade be built without any tunnels, such an approach was not feasible. Plans for the construction of the 4,200-foot Wawona Tunnel proceeded, posing many problems from the landscape standpoint. The result was not only an engineering feat but also a design solution that would influence the design of other areas where the construction of a tunnel was inevitable. The desire to create a dramatic overlook at the end of the tunnel and the practical problem of disposing of the extensive amount of fill excavated from the tunnel led to a solution whereby the excavated material was retained by a hand-laid embankment to create a terrace for parking and viewing. A simple curvilinear terrace was formed beside the roadway at the end of the tunnel, and an island graded to separate the overlook from the road and to control the flow of traffic on and off the road. The overlook provided a parking area bounded by a curb, sidewalk, and ribbonlike parapet wall. Upon exiting the tunnel, visitors would get their first expansive view over the valley and would be able to pull aside and leave their automobiles to contemplate or photograph the scene.¹³⁵

The National Park Service collaborated with Gilmore Clarke as early as 1929, when he consulted on a new plan for Mammoth Hot Springs. This collaboration continued through an exchange of personnel for several summers between the Landscape Division and the Westchester County Park System in New York. Highly regarded by the landscape architecture profession, Clarke's work in Westchester County would have continuing influence, as would Clarke himself, who was involved in the construction of the George Washington Memorial Parkway and was a member of the Commission of Fine Arts in the 1930s. Wilbur Simonson, who directed the work on the George Washington parkway, and Stanley Abbott, who became the designer of the Blue Ridge Parkway, both worked under Clarke in Westchester County. Abbott brought the latest aesthetic and engineering principles to national park work and went on to create a scenic parkway innovative in the use of spiral transitional curves and its sequence of views

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

of the rolling hillsides, farmlands, and forests.

Park roads took on new direction in the 1930s with the development of the Colonial Parkway between Jamestown and Yorktown, the construction of the Mount Vernon Parkway (1930), Skyline Drive (1930), and finally the Blue Ridge Parkway (1935). These roads represent the fusion of the Landscape Division's experience in designing the roads of national parks in the West, the advancements made by Westchester County under Clarke's direction, and the National Park Service's expanding definition of recreation.

By 1929 the road and trail program was being carried out under an appropriation of \$5 million a year. A ten-year program was under way calling for the reconstruction of existing roads to modern standards, the construction of new roads, and the improvement and extension of trail systems. At the end of 1931, the National Park Service considered several of its road projects outstanding. These were the Wawona Road and Tunnel in Yosemite, Generals Highway joining Sequoia and General Grant parks, Trail Ridge Road in Rocky Mountain National Park, Rim Drive encircling Crater Lake, Going-to-the-Sun Highway in Glacier, Colonial Parkway between Yorktown and Jamestown in Virginia, and Skyline Drive along the crest of the Blue Ridge in the proposed Shenandoah park.¹³⁶

By 1931, the results of the division's efforts to protect the roadside and natural landscape were visible. Vint credited this to the accumulation of completed work of several years of road construction, the success of the new specifications from both aesthetic and economical standpoints, and the enforcement of type B excavation practices. The division was providing architectural sheets for bridges, parking areas, intersections, and overlooks to the Bureau of Public Roads. Specifications covered such points as the rounding and flattening of slopes, removal of form marks, and methods of blasting less injurious to the surroundings. Quarries, borrow pits, and abandoned contractor's camps were left in a condition that could be naturalized. Embankments necessary to keep boulders, soil, and rubble from falling upon the roads or to reinforce a substantial area of fill to carry a road or support an overlook were being built by hand by dry-laid methods without mortar.

Recognition and praise came from the Bureau of Public Roads. At the twelfth conference of National Park Executives, in 1932, Dr. L. I. Hewes, the deputy chief engineer of the Bureau of Public Roads, estimated that the bureau had built about \$25 million worth of roads in the West for the service. He called the National Park Service's Landscape Division "pioneers" in road landscape work.¹³⁷

The achievements of the road-building program evolved from the technical and aesthetic experiments of the 1920s, the collaboration of the landscape architects and civil engineers, and the adoption of specific principles of design and practices of construction that emerged from Vint's office in the years from 1928 to 1932. Improvements continued during the 1930s, building upon the lessons of the 1920s and the groundwork of Vint's staff in the late 1920s. Road building in national parks was funded on a scale never-before

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

imagined. Through public works allotments and the efforts of the Civilian Conservation Corps, the construction of roads and the finishing of slopes to a naturalized condition created efficient, safe, and naturalistic systems of roads in each national park and many monuments. The achievements of the roads program were seen primarily in the parks of the West before 1932. In the 1930s, the focus shifted to the parks of the East, where the park service assumed leadership in the development of scenic and historic parkways, thus realizing portions of Mather's vision for a park-to-park highway system. The early lessons and the advances worked out in the 1920s and 1930s continued to guide park road development. They were inherent in the intent, principles, and philosophy underlying the design standards for modern park roads that the National Park Service published in 1968.

Construction of Trails

Both civil engineers and landscape architects were involved in the development of trails. The problems of trail building mirrored those of road building on a smaller scale. As in road design, the landscape architects helped to locate the trails, capturing scenic features and views and protecting significant vegetation, rockwork, and other natural features. The civil engineers were responsible for the construction of trails, which was often undertaken by staff within each park rather than outside contractors. The engineers were concerned with the gradient of the trails, attempting to maintain a varied grade not exceeding 8 percent and to use switchbacks only where a gradual curving uphill trail was impossible. The engineers also addressed practical issues like constructing a solid base for a flat, even path free of rocks, tree stumps, and roots. The landscape architects, however, viewed the problems of trail building from the perspective of visual and scenic character. Upholding the principle of harmonious construction, they recommended that structures along the trail and the surface of the trail be as inconspicuous as possible. Structures included the dry-laid rock benches that carried trails; stonemasonry parapets, culverts, and bridges; and trailside improvements such as signs, benches, springs, and lookouts.

As in road construction, the creation of trails in mountainous or canyonlike areas challenged engineers to find a feasible route and often required drilling and blasting. Equipment was transported by horse or mule, and workers relied on safety lines. The landscape architect's challenge in such cases was to ensure that the excavation did not mar the natural beauty of the area and that scars were inconspicuous, especially when viewed from popular viewpoints. The Ptarmigan Trail in Glacier, the Four-Mile Trail in Yosemite, and the New River Trail at the base of the Grand Canyon all posed such challenges.

By the end of the 1920s, the Landscape Division was becoming more and more concerned about the visual compatibility of trails with their surroundings and significant natural features. Naturalistic solutions were explored for the replacement of the outmoded timber stairways and observation decks on Moro Rock in Sequoia and along the Grand Canyon of the Yellowstone. Earthen paths and

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

masonry parapets and stairways of native stone began to be employed. Such a system could be modeled and colored to blend into nature's surrounding rockwork. Built in 1931, the new stairway at Moro rock was a series of stairs and ramps 798 feet in length that ascended the granitic dome on the southern rim of the Giant Forest Plateau; it was designed to fit the natural contours of the ridge, following natural ledges and crevices and using ramps flanked by stonemasonry walls and surfaced with concrete mixed with particles of natural granite to match the bedrock.¹³⁸

The Landscape Division drew heavily on its experience in road construction in making improvements along trails. Although trails differed from roads in scale, the functional and design problems of trail building were similar to those of road building, particularly in popular areas. Concern for visitor safety as well as access necessitated, for example, the grading and surfacing of trails and the construction of sturdy bridges, stairways, and protective barriers, which in turn called for harmonious and inconspicuous solutions. In some areas, such as Sunrise Ridge on the Yakima Park Road at Mount Rainier, the installation of walks and protective parapets was integrally linked to the development of park roads. In other areas, such as the promenade at Rim Village in Crater Lake, trails were developed independently from the road program but adopted many of its solutions.

The lessons of surfacing roads with macadam of crushed gravel taken from native stone and constructing masonry walls of native stone with exposed weathered surfaces were readily applied to trails. Not only could these improvements be made on site with existing local materials requiring the portage of only essential equipment, but the improvements themselves could also be fashioned to achieve naturalistic curvilinear lines that at once followed nature and blended inconspicuously with the natural setting. One of the most remote developments of this type was the Ptarmigan Trail and Tunnel constructed at Glacier in the late 1920s. Here a tunnel was necessary to pass through 180 feet of solid limestone at an elevation of 7400 feet. The tunnel was approached along a trail carved into the side of the cliff and protected by an irregular stonemasonry guardrail that blended with the surrounding rock. The achievement was a remarkable engineering feat and a notable success in blending manmade improvement and natural scenery to fulfill the goals of landscape protection and accessibility.¹³⁹

Building trails in unusual terrain such as the geyser formations at Yellowstone demanded specialized treatment. Concrete and masonry were considered inappropriate here because of the damage to the natural formations. Log curbing arranged in free-flowing curves and topped by a wooden boardwalk provided a safe surface across the open grassland of the formations. This technique was used at Old Faithful in the late 1920s and at Norris Geyser Basin in the mid-1930s when the Civilian Conservation Corps constructed a naturalistic loop trail through the basin.

The achievements of the late 1920s and early 1930s established precedents that were followed and modified to suit local conditions during the New Deal. Trail improvements were slated for the most popular scenic attractions in other

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

national parks, including the Grand Canyon of the Yellowstone with its many viewpoints, the South Rim of the Grand Canyon, and Carlsbad Cavern. The advances in masonry guardrails and the development of surfaces that used natural materials made it possible to adjust construction and appearances for local topography, conditions, and setting and at the same time construct sturdy and durable improvements that could sustain adverse weather conditions and heavy visitor use. Many of the trail improvements funded by Public Works Administration allotments followed the principles and incorporated the methods of blending and harmonization that the Landscape Division and Engineering Division had worked out by 1930. The Civilian Conservation Corps working in both national and state parks perpetuated these principles and practices to an unprecedented extent.

By 1930, improvements were taking place in the construction of trail bridges. Designs and materials depended on the site, setting, and function of the bridge. Bridle trails, for example, required bridges of greater strength, width, and clearance than foot trails. While simple cross-plank bridges were sufficient to carry hikers across streams, more elaborate solutions were sought for deep precipitous gorges. Log bridges were generally preferred, and by the end of the 1920s, efforts were being made to fashion them from logs similar in size to those in the surrounding forests. While a few bridges, such as the suspension bridge carrying the Kaibab Trail across the Colorado River at the base of the Grand Canyon, were particularly notable as engineering achievements and were designed by national park engineers, they heralded advances in landscape design as well. Like road bridges, trail bridges were designed to fit into their sites and harmonize with their natural settings. The Kaibab bridge was built in the late 1920s to replace an earlier one. The approaches were tunnels carved through the canyon walls with naturalistic cavelike portals. The bridge, constructed of steel cables and girders, was stained a special color to blend in with the canyon walls and river sediments. This was the first major application of staining to match metal surfaces with natural scenery.

In the late 1920s, the park service focused increasingly on designing and building sturdy trails that could serve those on horseback as well as those on foot. Considered outstanding were the five-foot-wide Kaibab Trail of the Grand Canyon, the trails to the East and West Rims of Zion, the High Sierra Trail from the Giant Forest toward Mount Whitney in Sequoia, and the Four-Mile Trail from Yosemite Valley to Glacier Point.

In October 1934, the Engineering Division published its first standards for foot and bridle trails. These would be used by the builders of national park trails for several decades. The standards developed by chief engineer Frank Kittredge and his staff were instructions for trail-building in the form of a large sheet with diagrams that could be folded into a pocket-size reference guide for use in the field. These standards ensured that foot and bridle trails were durable, safe, and pleasurable to use.

Specifications for building trails called for a standard width of 4 feet, which could be accommodated by cutting into the slope or by benching the

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

supporting ground with a dry-laid wall of large stones. Dry random rubble walls could be built down hill to retain soil and rocks on a steep slope or uphill to retain material above the trail and prevent slides. All walls were to be battered. The grade was limited to 15 percent except in extreme cases, and grades of less than 15 percent were recommended wherever possible without unduly extending the length of the trail. To avoid excessive construction costs, grades of 18 and 20 percent were allowed in short stretches 150 feet or less. The grade was to vary at intervals, in order to "avoid all the strain being confined to a certain few leg muscles."¹⁴⁰

The landscape architects of the Branch of Plans and Design (formerly Landscape Division) reviewed and approved all phases of trail location, the construction of culverts and walls, and the removal of large trees. Trail-builders were asked to make sure that all evidence of construction outside the trail prism was held to a minimum to preserve the natural setting. The ground was to be cleared to provide a ten foot clearance above the trail, and no more than one-foot to either side of the trail or the cut or filled areas. The trail was to be routed around large trees, and walls, culverts, and other features were to be constructed to harmonize with the natural setting and avoid the destruction of natural features.¹⁴¹

The Design of Park Structures

From 1927 to 1932, the building program of the National Park Service made substantial progress in providing each park with administrative buildings that were functional and harmonious in design. Utilitarian industrial buildings such as garages and workshops were arranged to form enclosed compounds where their activities did not interfere with visitors' use of the park. At campgrounds, community buildings served a number of functions, including quarters for rangers, central showers, and gathering places for relaxation and evening lectures. Each building, whether an administration building or an employee residence, was designed for its site and setting, fitting the development scheme determined for the area. Each reflected an architectural theme based on native materials, method of construction, and sometimes a cultural theme drawn from the region's pioneering or indigenous architecture. Designers often created buildings to match the style of preexisting structures felt to be in keeping with the natural character of the park.

In the late 1920s, Vint realized that architectural themes could be imposed on standard plans that met the broad functional needs of parks in general. The designs for new buildings were therefore standardized according to type, providing model floor plans and elevations that could be adopted elsewhere in the park. The materials, type of construction, and details of park structures, on the other hand, were determined by the natural qualities of each site, including climate, weather, presence of local stone or timber, topography, and the scale of surrounding forests. While larger structures, such as administration buildings, were generally unique designs, structures such as patrol cabins or comfort stations could follow a common design that was

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

repeated throughout the park. The same design might be used again and again in one park, provided the external characteristics of the structure fit harmoniously into the natural setting.

For this reason, a number of successful designs developed in the late 1920s reappeared in the public works and emergency conservation programs of the New Deal era. For example, about 1928 an efficient design for a duplex comfort station was developed. The building was divided into separate sections for men and women, which were entered by doors with screens and roofs on opposite ends. A utility room separated the two sections in the center of the building. The prototype for this design appears to be the Union Point comfort station at Yosemite, which was repeated several years later at Tuolumne Meadows and whose floor plan and utilities layout appeared in many forms throughout the 1930s. With separate paths and screened entrances, the solution proved efficient for utilities and still maintained the privacy of separate structures.

Also important was the development of standards for the construction of housekeeping cabins. In the mid-1920s, housekeeping camps were first introduced in the national parks as an experiment. They proved particularly popular among tourists and profitable for concessionaires. Soon concessionaires were demanding that they be allowed to build large numbers of such facilities, preferably laid out in rectangular grids so that their allotted space could be filled with as many cabins as possible. Because of the increasing demand, Director Horace Albright requested that Vint's division make a special study of housekeeping cabins and draw up plans for a cabin suitable for the automobile tourist in the national parks.

In consultation with the service's sanitary engineer, the division developed Standards for Housekeeping Cabins to be followed by both the government and park operators. Issued in November 1929, the standards took the form of three sheets of drawings that specified physical requirements such as equipment, size of cabin, and number of windows, rather than preferred floor plans or designs. The study proved useful to the development of concessionaires' facilities and to the service's landscape program. Within the next few years, the demand for cabin development and housekeeping accommodations increased, and the standards enabled the park designers to review the adequacy of concessionaire's plans. By 1932, these lower-priced accommodations had become increasingly popular, and a definite trend toward housekeeping camps became apparent and continued into the 1940s. The Landscape Division reviewed many plans submitted by concessionaires to meet this demand by modernizing their existing complexes or by constructing entirely new ones. Unlike the lodges at Zion and Bryce, which offered accommodations in several types of cottages that were spaciouly arranged in keeping with the natural contours and blended harmoniously into the wooded areas, the new housekeeping camps called for large numbers of uniform cabins situated closely together, replacing what previously would have been a tent platform. In their best configuration, the camps were laid out in courts with curving walkways and roads; in their least desirable form, they were densely clustered in a rectangular grid with only enough space for parking a car alongside. Whatever the configuration, the Landscape Division did require

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

that wiring for utilities be placed underground to overcome the spider-web effect of cabin camps.¹⁴²

Rather than artlessly massing standard cabins, several concessionaires developed communities that provided model solutions for maintaining a harmony between the manmade accommodations and the natural setting. The two most noteworthy were the North Rim development of the Utah Parks Company designed by Gilbert Stanley Underwood, and several years later, Mary Elizabeth Jane Colter's Bright Angel Lodge and cabins for the Fred Harvey Company at Grand Canyon.

The standards made it possible for the park designers to draw up model designs useful in other aspects of park architecture. They would have the strongest influence in the development of recreational cabin areas in state parks through the work of the Civilian Conservation Corps and later the Works Progress Administration. In 1934, Conrad Wirth compiled a portfolio of the variations on housekeeping cabins that had been developed by the Landscape Division, by then called the Branch of Plans and Design, and the Resettlement Administration. These plans served as models for conservation work and other relief work in state parks and in recreation demonstration areas.

Within these requirements, there was a great deal of latitude. Park landscape architects drew on Bungalow and Craftsman motifs, designs, and plans. Park buildings constructed by the concessionaires, the creative achievements of the Underwood firm and Mary Colter, the work of Jesse and Aileen Nusbaum at Mesa Verde, and Herbert Maier's highly individual and successful designs for park museums provided a wealth of inspiration and a climate of free expression. While Vint's staff perfected the design of log and stone structures, they also studied other cultural and indigenous traditions and explored such materials and methods as adobe.

If the early 1920s were a period of experimentation with forms, materials, and architectural themes, then 1927 to 1932 were the years when principles and practices borrowed from Downing, Vaux, Olmsted, and Hubbard and a variety of architectural styles coalesced to form a mature ethic of rustic and naturalistic design that would be carried over into the 1930s and affect the character of national and state parks nationwide. In 1932, Vint compiled a portfolio of representative administrative buildings and structures that was circulated to various parks. Illustrated were the administration buildings at Longmire (1928) and Yakima Park (1931), the comfort stations at Union Point in Yosemite (1928) and Logan Pass in Glacier (1931), the Tioga Pass entrance at Yosemite (1931), a ranger dormitory at Crater Lake (1932), a community building at an unidentified location (1927), the fire lookout at Crane Flat in Yosemite (1931), and checking stations at Sequoia and Mount Rainier (1926). Residences were drawn from the work at Yosemite Village, where there had been a serious shortage of housing in the late 1920s. Among these were a dentist's residence (1931), a four-family residence (1930), and a cabin designed for the new Indian village. Other examples of housing included a staff residence built at Mount Rainier (1930) and the superintendent's residence and ranger dormitory built at Crater Lake (1932). The buildings selected for the portfolio reflect not only

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

the maturing architectural vision of Vint and his staff but also their collaboration with other programs of the National Park Service.¹⁴³

By the late 1920s, the Landscape Division was cooperating with the educational, engineering, sanitation, and forestry divisions to develop specifications and typical designs for diverse structures from fire lookouts to trailside exhibits. Under the leadership of chief naturalist Ansel F. Hall, the Educational Division grew in the 1920s. This division offered myriad programs to teach visitors about the natural history of the parks, including interpretive trails and waysides, museums, gardens, nature shrines, and amphitheaters. Since many of the division's programs involved building structures or trails, the Landscape Division had worked closely with the division since 1924, when the Yosemite Museum and the Glacier Point Lookout were being planned and constructed in Yosemite.

Herbert Maier, the designer of these buildings, collaborated closely with Hall and a special committee of outside experts to work out the final design of the buildings and their exhibits. Maier went on to design a number of museums funded by the Laura Spelman Rockefeller Foundation for various national parks. He created a series of museums for Yellowstone and expanded the idea of the trailside museum devoted to the interpretation of a single aspect or particular area of a park, such as the Norris Geyser Basin or Fishing Bridge area. By 1930, he had also designed the Yavapai Observation Building and Museum on the South Rim of the Grand Canyon. The government landscape designers, particularly Vint, collaborated with Maier and the museum committee in selecting the sites for the museums and reviewing Maier's designs.

The first museum to receive special congressional funding was the Sinnott Memorial at Crater Lake. Designed by Vint's office, the building closely followed the solutions for a rimside observation-type building that Maier had worked out for the Yavapai Observation Building. It was also influenced by Colter's Lookout and Hermit's Rest at Grand Canyon. Rather than being located at the top of the rim, however, the stonemasonry building fit closely into the steep slope of the crater high above the lake and assumed the form of an eagle's head.

By 1930, the concept of natural history interpretation had expanded to encompass trails, trail hubs, wild flower gardens, trailside nature shrines, branch museums, naturalist residences, and outdoor amphitheaters. The education programs expanded and made use of the natural and scenic features for on-site interpretation. As these structures developed to serve the expanding interpretive programs, they assumed a distinctive stylistic character that placed them in both the traditions of rustic architecture and naturalistic landscape design.

Most ambitious was the education program at Yellowstone, where the Old Faithful Museum was accompanied by branch museums at Fishing Bridge, Madison Junction, Norris Geyser Basin, and Mammoth Hot Springs. The museum concept thus grew from the idea of a central museum with an outlying lookout, as built in Yosemite about 1925, to a parkwide system of branch museums, each containing a museum, residence, amphitheater, trails, parking areas, paths, and comfort

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

stations. They could be connected with a nearby concessionaire's complex and campground to provide visitors convenient access at all times of the day.

Amphitheatres and interpretive waysides were additional structures that emerged from the work of the Educational Division in the late 1920s. In 1927, Ernest Davidson, the resident landscape architect assigned to Yellowstone, discussed various improvements and installations of exhibits at the major overlooks at the Grand Canyon of the Yellowstone, including Artist's Point and Inspiration Point. Although Hall's plans for redeveloping the paths and overlooks along the Canyon never materialized, the ideas were further expanded in the master plans of the 1930s and laid the groundwork for future interpretive developments incorporating trails, walkways, observation platforms, and interpretive shelters, called "nature shrines." Although such features were being developed in a number of parks, Yellowstone's interpretive program led the service in integrating these features into the design and operation of museums throughout the park. These structures drew heavily from the traditions of rustic architecture and naturalistic gardening.

The first interpretive wayside constructed at Yellowstone was the nature shrine at Obsidian Cliff (1931), which explained to the public the site's natural formation, a mountain of volcanic glass approximately two miles long. This was one of several significant innovations made by Carl Russell, the park naturalist. Built on the west side of the Grand Loop Road twelve miles south of Mammoth Hot Springs, the kiosk, measuring six by sixteen feet, was set twenty-five feet from the road at the edge of a parking lot and at the base of the cliff. It was constructed of clustered columns made of basaltic stone blocks and a wood-shingled, overhanging roof supported on log timbers. The open-sided structure housed exhibit panels that were originally placed behind glass. Flagstone paving and native plants surrounded the kiosk in its original design. A number of smaller trailside nature shrines were constructed of native logs and stones in Yellowstone at the same time. Several of these structures were illustrated in the National Park Service's portfolios published in the 1930s.¹⁴⁴

The amphitheater was first incorporated into the design of Yellowstone's Old Faithful Museum and similarly appeared at the Fishing Bridge Museum. The idea of an amphitheater in a national park, however, was not new. In 1920 at Yosemite, a simple outdoor auditorium seating 250 people had been constructed in a natural amphitheater surrounded by trees using funds provided by the Sierra Club and M. Hail McAllister of San Francisco. The seats were in three rows of twelve-foot pine logs about eighteen inches in diameter with the bark left on. They had backs of canvas inserted over one-inch iron pipe frames and were arranged on a slope facing the speaker's stand. Charles Punchard praised this design as "attractive, unique, and comfortable" and recommended the development of outdoor amphitheatres in other parks.

Outdoor theaters and amphitheatres appeared across the nation in the early twentieth century; they were a popular feature in parks, college campuses, and private estates. The grandest was the great Greek Theater at the University of California, Berkeley, a prototype with which Maier and Vint were familiar.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

National park designers likely knew of the amphitheater designed by Myron Hunt at Pomona State College in California. Articles appeared in *Landscape Architecture* and other journals in the 1920s on the construction of outdoor theaters. Frank Waugh had a continuing interest in amphitheaters and published *Outdoor Theaters: Their Design, Construction, and Use of Open-Air Auditoriums* in 1917, and several articles in the 1920s. He wrote on natural amphitheaters and the relationship of the amphitheater and the campfire. In his own landscape work, he adapted the more traditional forms to the natural setting of national forests.¹⁴⁵

The semicircular amphitheaters at the Old Faithful and Fishing Bridge museums in Yellowstone were modified versions of the traditional Greek theater form built into a hillside with radiating aisles and rows of seating rising evenly from a center stage. Maier's semicircular design was better suited to the intimate woodland surroundings and use for evening lectures and slide shows. While he clearly drew from the Berkeley example, he developed it on a much smaller scale and in a naturalistic manner befitting its forested location. Screens of trees hugged the theater's edges and created a backdrop for the stage, and scattered trees within the theater were left in position while seats were built to either side of them. Roughly hewn logs were laid vertically to create a backwall for the stage, echoing the verticality of the surrounding forest and framing the slide screen. Benches were also fashioned from split logs. The amphitheater incorporated the traditional campfire in the form of a ring placed before the stage. As Maier's amphitheater--with its radiating aisles and arcs of seating descending the slope toward the stage--was adopted in other parks, this campfire circle was moved to one side of the stage, so that smoke from the campfire would not obscure the audience's view of the slides being projected on the screen or activities occurring on stage.

By 1932, the amphitheater had become an important and regular feature of park campgrounds where evening ranger talks could be heard. Most of these were adaptations of Maier's theater in the woods. Variations included outdoor theaters at Zion and Mesa Verde, where the theater was situated in a depression along the rim of a canyon to present a scenic view that could be interpreted by a ranger or simply contemplated in a type of open-air temple.

By the end of 1932, the expansion of the education program was reflected in the design of new kinds of structures and features in the parks. Amphitheaters, nature trails, lookout shelters, nature shrines, and campfires were built in conjunction with campgrounds and other developed areas. Park designers at Paradise experimented with a centralized trail hub from which interpretive trails could lead to scenic areas and special features of the park in conjunction with the new landscape work around the community building and housekeeping cabins. This idea was later recommended for the terminus of trails at Tuolumne Meadows in Yosemite.¹⁴⁶

Another growing function of the National Park Service was the protection of park forests carried out under the Forestry Division, part of the Western Field Office headed by fire-control expert John Coffman. Coffman had developed detailed surveys of fire hazards in a number of parks and comprehensive plans

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

for the prevention and suppression of forest fires in those areas. A number of serious fires, including the Half Moon fire at Glacier Park, called for liaisons and collaborative effort with other agencies. In 1929, the Landscape Division collaborated with Coffman to develop standard designs and specifications for forest lookout towers.¹⁴⁷

In 1931, two exemplary lookouts were constructed: The Watchman at Crater Lake and the Shadow Mountain Fire Lookout at Rocky Mountain. A year later, Lassen's Harkness Peak Lookout was added to the repertoire of successful designs. These designs used stone and timber materials fashioned into functional designs that included a large viewing platform entirely surrounded and enclosed by large windows and surrounded by an outside balcony. The fire lookout posed a dilemma for designers: in order to perform their essential function, these structures needed to be situated on prominent peaks; they needed to provide visibility in 360 degrees; and they could not be concealed or screened by vegetation. The use of native stone and timber and the simple, rectangular form with hipped roof contributed greatly to the ability of these structures to blend inconspicuously into their setting, even when viewed from a neighboring peak or nearby trail. Towers such as the Watchman not only helped detect fires in remote areas, but also were open to visitors for the enjoyment of scenic views. These basic designs would be repeated in appropriate local materials in many variations throughout the parks in the 1930s.

A Program of Landscape Naturalization

The naturalistic landscape gardening practices that had evolved in the 1920s called for the planting of groupings of native trees, shrubs, and grasses along roadways, construction sites, and eroded areas and the removal of vegetation for fire control and beautification. As construction took place in the parks, trees and shrubs were removed from the construction sites of buildings, roads, overlooks, and parking areas and transplanted in temporary nurseries or on the sites of completed construction. This process of transplanting and replanting became known as "landscape naturalization" by 1930. At this time, the National Park Service under the leadership of Harold C. Bryant banned the introduction of exotic plants into the parks and encouraged the elimination of exotics already growing in the parks. This change occurred at the same time that park service landscape architects were developing a process of flattening and rounding slopes to curb erosion and naturalize park roadways.

National park designers recognized the benefits of planting in the late 1910s and early 1920s. Charles Punchard had encouraged Yosemite's park superintendent and concessionaires to use techniques of the Arts and Crafts movement to conceal artificial surfaces with a mantle of vines and other native plants. He had drawn attention to the need to replant the giant sequoias of Sequoia National Park in 1919. In 1925, Hull called for reforestation to screen or mask unsightly objects or burned over areas. That year, in cooperation with the Public Health Service, Hull had used plantings to rehabilitate the Apollinaris Spring in Yellowstone, making the area more

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

attractive and sanitary, and recommended that springs in other parks be studied with the idea of enhancing their usefulness and beauty. It was not until the end of the decade, however, that planting was done in a routine or serious manner either as a consequence of construction or as an effort to add to the scenic beauty of the park.¹⁴⁸

In spring of 1927, Vint hired Ernest Davidson, who had substantial experience in planting and transplanting trees and shrubs. Davidson's first assignment was to supervise the planting of trees at the Gardiner Gate at Yellowstone and the Mammoth Hot Springs and Canyon campgrounds. Later that year at Mount Rainier, Davidson began a planting program for Longmire Village that was carried out over several years and included foundation plantings; the creation of rock gardens; screening; and displays of native vegetation around the new administration building, employee residences, and the community building at the campground. Plantings of native plants, shrubs, and trees followed the patterns of natural vegetation of the surrounding woodland and were accompanied by improvements such as curving flagstone and gravel pathways and curbs of rock cobbles. The thick forests at Longmire consisted of a canopy of mature trees that consisted predominately of western hemlock (*Tsuga heterophylla*), Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), and Alaskan cedar (*Chamaecyparis nootkatensis*) and an understory of herbaceous plants and shrubs that included salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), Oregon grape (*Berberis nervosa*), and vine maple (*Acer circinatum*). Planted in November 1929 were 112 evergreen trees two to twelve feet in height, 441 deciduous trees and shrubs one to ten feet in height, 149 small perennial plants, and a large number of ferns. This work erased the scars of construction, creating the illusion that the woodland had never been disturbed.¹⁴⁹

The plantings consisted only of species native to the Longmire site and followed Henry Hubbard's advice in the *Introduction to the Study of Landscape Design* that trees and shrubs be planted at the corners of buildings to create a foreground for the facade, to enframe the building with vegetation, and to make the main entrance more prominent. Ground covers, particularly ferns, were used to add interest and to mask the line between the ground and the stone foundation of the buildings. Ferns were an ideal ground cover in temperate climates and moist woodland settings. They were commonly planted along the foundations of Adirondack lodges and were well-suited to the forested setting of Longmire village at Mount Rainier.

Davidson documented his work in an illustrated report in 1929, which was used to encourage transplanting and planting projects in other parks. Director Horace Albright immediately supported this work as a feature of all future construction projects. Named "landscape naturalization," the work was defined as:

Grading around buildings or elsewhere for better topographical effects; filling and fertilizing of soils; transplanting or planting of trees, shrubs, lawns, flowers, to make artificial work harmonize with its

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

surroundings; erection of outdoor furniture such as stone seats, drinking fountains, flagstone walks, etc.; vista clearing and screen planting and cleanup in areas not included as Roadside Cleanup.¹⁵⁰

Under landscape naturalization, Vint grouped much of the work that had been the responsibility of park designers since Punchard, such as the clearing of vistas and campground development. Realizing, however, that landscape harmonization required much more than locating and constructing rustic structures whose design and materials blended with the natural setting of a park, he added planting and transplanting and the construction of small-scale landscape features, such as water fountains and walkways. These improvements were essential to the village concept, making the village setting more attractive and the visitor's stay more comfortable. Such improvements also enabled park designers to better manage pedestrian and motor traffic, ensure safety and sanitation, and alleviate some of the wear and tear of visitor use.

Decades of increasing visitation and use were already affecting the natural character of parks. The low-budget expedients such as wooden-frame stairways and boulder-edged drives were wearing out and could no longer accommodate the increasing numbers of park visitors. Improvements in the roads and trails program had demonstrated the value of stone curbs and sturdily built trails, walkways, and guardrails. Walkways and curbing allowed park designers and managers to channel pedestrian and automobile traffic and thus minimize the wear and tear of visitor use on park resources, while guardrails ensured safety at precipitous points. The transformation of springs into pipe-fed pools and lush rock gardens ensured sanitation and provided places of appealing beauty. In short, the park designers faced the challenge of solving urban-scale problems without sacrificing natural features and scenic qualities. The program of landscape naturalization enabled park designers to create or maintain the illusion that nature had experienced little disturbance from improvements and that a stone water fountain or flagstone terrace was as much at home in a park as a stand of hemlocks or meadow of wild flowers.

Large-scale revegetation programs were instituted in several parks. One of the earliest was Rocky Mountain National Park. In 1930, Vint and Charles Peterson visited the park with ASLA representatives Gilmore Clarke and Charles W. Eliot II to examine the park boundaries and make recommendations for restoring the natural landscape in areas, such as Aspenglen, that had been heavily grazed or logged. Later that year, 1,200 three-year old western yellow pine trees were planted near the Aspenglen campground. Local hiking and conservation organizations commonly assisted in some of these early efforts.¹⁵¹

Trees were now protected during the construction of buildings; afterward they became the screens to hide development or were blended with new plantings in naturalistic groupings. Provisions were entered into the wording of contracts for the construction of buildings that required contractors to protect trees in the vicinity of their work. Not only did landscape architects confer on the location of sites for buildings, but they also identified the trees that were to be retained. This process also applied to the clearing of

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

selected trees and vegetation in campgrounds or picnic areas. Construction scars were erased as native grasses, ferns, and shrubs embraced battered stone foundations. Tall trees were planted individually or in small clusters at the ends of bridges and corners of buildings to blend the construction with the natural setting.

Landscape naturalization revived many of the planting practices that Downing, Repton, Robinson, Hubbard, and Parsons had promoted. Several of these techniques, including the planting of climbing vines to disguise concrete and stone walls and ferns around foundations, had been favored by the Arts and Crafts movement and accompanied the use of native wood and rock as construction materials to harmonize a structure with its natural setting. Naturalistic devices such as rock gardens, fern gardens, vine-draped walls, curvilinear paths and stairs, and boulder-lined walks had been popular in the Adirondacks and had regional equivalents in California gardening.

The expanding natural history programs of the parks provided a wealth of information about the plant ecology, natural features, and native species of each park. With this information, landscape architects could readily apply Waugh's ecological approach of grouping plants, shrubs, and trees according to their associations in nature. Such work was often done informally as landscape architects and foremen on site drew materials and ideas for species composition from the surrounding woodlands and meadows. In other places, efforts were made to recreate lost plant colonies, such as wild flowers in the meadows of Yosemite. These plantings were motivated by the need to naturalize an area whose vegetation had been destroyed by construction, erosion, excessive use, or the elimination of old roads and trails. It was also motivated by the need to create an artificial screen or windbreak.

In 1930, the National Park Service established a policy excluding all exotic seeds, plants, and animals from the national parks. This policy drew greater attention to the emerging program for landscape naturalization, which dealt primarily with transplanting native plants, shrubs, and trees from one location in a park to another. In November 1930, Albright issued a "set of ideals" for the use of native flora and the elimination of exotics already planted around hotels, lodges, and private dwellings.¹⁵²

This policy was by no means sudden or unprecedented. Many park superintendents already had set forth similar rules for concessionaires and park residents. Joseph Grinnell and Tracy Storer of the University of California, Berkeley, had called for the elimination of exotic plants and animals from the national parks in an article in *Science* in 1916. In 1921, the American Association for the Advancement of Science had issued a resolution strongly opposing the introduction of nonnative plants and animals into the national parks and all other unessential interference with natural conditions.¹⁵³

This policy would become one of the basic guidelines for Emergency Conservation Work in national and state parks, where many "landscape naturalization" projects were carried out in the 1930s. Numerous Civilian Conservation Corps projects in both state and national parks called for the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

transplanting of native trees, shrubs, and other plants and the eradication of exotics already growing in the parks.¹⁵⁴

Under the leadership of Ansel Hall, who headed the Educational Division in the Western Field Office, and with the support of the Laura Spelman Rockefeller Foundation and the American Association of Museums, programs interpreting the natural history of the parks expanded in the late 1920s. By the late 1920s, they included flora studies, ranger talks and tours, museum exhibits, institutes, and the publication of "nature notes" in many parks. The educational program provided abundant information that could be used in the landscape naturalization program. Each park had a rich palette of native specimens that included herbaceous plants, shrubs, and trees, which could be used to naturalize the grounds of museums, wayside exhibits, amphitheaters, and trail hubs. Native plants and curving paths edged with natural cobbles and boulders drawn from nearby streambeds became an important characteristic in the landscape design of these new facilities. By 1930, outdoor "zone" gardens had become a popular interpretive feature of national park museums.

The first wild flower garden was planned around the lookout at Glacier Point in Yosemite as a collaborative effort between the Educational and Landscape divisions in 1925. It was not until the end of 1929 that wild gardens were considered a regular feature. That year, gardens were planted at the newly completed museums at the Old Faithful formation in Yellowstone and Yavapai Point at Grand Canyon. In Sequoia, a wild flower garden was established at Giant Forest in an area approximately forty by sixty feet, adjacent to the museum and administration buildings. About seventy species of wild flowers were transplanted and labeled with metal signs, many of the specimens being carried from Alta Peak and other timberline habitats many miles distant, while others were brought up from lower elevations. A moist rock garden had been planted as a student experiment behind the Yosemite Museum, and the Castle Crest Garden was taking form near the headquarters at Crater Lake. At Yellowstone, naturalist Carl P. Russell integrated interpretive gardens and natural plantings into the design of branch museums at Fishing Bridge, Norris Geyser Basin, and Madison Junction and the trailside exhibits, nature shrines, and lookouts that were being developed throughout the park. The gardens were generally situated on one or several sides of the building and were laid out among shrubs and trees preserved during construction. Trees were planted at the entrances and corners of the buildings much as Davidson and Sager had done at Mount Rainier. What was different however, was the integration of plants and labels along the paths leading to the museum's entrance and to the outdoor garden, amphitheater, or naturalist's residence.¹⁵⁵

Museum gardens were a direct result of the park service's expanding interest in natural history. Not only had Harold C. Bryant been appointed to the service's new position of assistant director for education in Washington, but parks had also begun to hire resident naturalists to direct the interpretation programs. Interpretation relied upon both plantings of native vegetation and the preservation of the natural ecology of the park. The advances and discoveries made by the naturalists contributed to the specialized

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

horticultural knowledge of park landscape engineers and architects, who grouped native, wild species based on climate, elevation, soil, and water as they developed a palette appropriate to each location within a park. Selection of appropriate plants, the dynamics of natural revegetation, methods for transplanting, and the necessary conditions for propagating were all areas in which the park naturalist could help the landscape architect. Although no formal procedures existed for this interaction, the presence of landscape architects on site in the parks to oversee grading, sloping, and planting activities would have provided many opportunities for collaboration.

Unlike buildings, which could be constructed in a single season, it took several seasons to establish life-zone gardens and achieve splendid displays of park flora. Donations of time, labor, and funds contributed to the development of many park gardens. At Grand Canyon in the area surrounding the Yavapai Point Observation Building, an extensive garden of native wild plants was begun as soon as the museum was completed in 1929. By 1931, plants from the Canadian Zone of the North Rim and from the Lower Sonoran Zone within the canyon were installed in defined plots along tightly curving paths studded with local boulders. The rest of the area was landscaped with plants of the Upper Sonoran Zone, which is the natural habitat at the South Rim. The Boy Scouts of America, which made a naturalist-expedition to the park in 1930, contributed the initial planting for the garden. Later, plants were added by park naturalists.¹⁵⁶

The development of interpretive gardens extended to the national monuments as well as the parks and became increasingly popular features in the 1930s. Casa Grande, which was also the headquarters for the southwestern monuments, had installed an interpretive desert garden in the late 1920s. By 1930, a garden of southwestern plants and cacti had been planted at the entrance to Carlsbad Cavern, attracting visitors and furnishing an excellent opportunity for nature guide service. By 1931, there were plans to reestablish lost flora at Muir woods, including the azaleas, dogwoods, and other flowering plants that were almost exterminated in the past. Many of these gardens were plotted in the master plan for each park.¹⁵⁷

Landscape naturalization required a readily available source of native plants. In reviewing the location for new facilities, the landscape architects carefully identified the trees that were to be saved and protected during construction. Other plants, trees, and shrubs were dug up and transplanted to other locations where they were needed for naturalization. The road construction program provided large numbers of trees and shrubs for this purpose. In many cases, however, the number of native plants was insufficient to fill the demand, especially for the mass plantings of large areas or the replanting of special species such as the giant sequoia. The demands of a landscape naturalization program for plants materials exceeded the available supply.

Sequoia was one of the first parks to establish a nursery for the holding of transplanted materials. The idea to reseed the giant sequoias as they died had originally been Punchard's. In the mid-1920s, after the forest pathologist E.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

P. Meinecke made the startling discovery that man's presence in the Giant Forest was the prime reason for the dying trees, a nursery was started at the Ash Mountain headquarters. By 1930, the nursery provided stock for reforestation in trampled areas in the Giant Forest, planting in the administration area, and furnishing sequoia seedlings to selected institutions and organizations. The seeds of many native plants were gathered to increase the variety of planting stock. In 1930, the nursery was enlarged, and by 1935, it had outgrown its space and was moved outside the headquarters area.

Although the main purpose of the park nurseries was to provide large numbers of native trees and shrubs for mass plantings in areas whose native cover had been destroyed by forest fires and previous destructive uses, the nurseries also became useful places to hold plants removed from construction sites that were not immediately planted elsewhere in the park. Moreover, construction sites rarely provided sufficient numbers of plants and trees for large reforestation projects; in these cases the nurseries became important centers of propagation and cultivation. A nursery for reforestation was established in Acadia before 1930. At Yellowstone, the Game Ranch located near Gardiner was developed as a nursery and propagating center, making use of irrigation and the area's low elevation, sunshine, and iron gauge fencing, which kept out wild predators. Here in specially prepared beds, sheltered by rows of locust, plants such as Douglas firs and roses were started and nurtured, transplanted, and moved as needed.¹⁵⁸

Another source of trees was the U.S. Forest Service. Public Act 319, 71st Congress, approved on June 9, 1930, which authorized the Department of Agriculture to enlarge the tree-planting operations of national forests, also authorized the Forest Service to provide seedlings and young trees for replanting of burned-over areas in any national park, upon the request of the secretary of the interior. Although the Civilian Conservation Corps was assigned to clean up areas burnt by forest fires in Yellowstone and Glacier, the extent to which the National Park Service used this authorization to restore burnt areas is unclear.¹⁵⁹

In the 1930s, the National Park Service became a partner in a larger movement that was occurring in various state institutions. State agricultural experiment stations, and consequently the state extension services and nursery programs, were the main promoters and practitioners of the use of native vegetation for roadside and forestation purposes. These institutions were also sources of native plants used in Civilian Conservation Corps projects in state and national parks. As the National Park Service took leadership of Emergency Conservation Work in state parks in the 1930s, it became apparent that most state parks, especially those developed from submarginal farmland, were in need of planting stock. Nurseries were established at some parks--for example, Virginia Kendall State Park, near Akron, Ohio. In parks such as Ludington State Park in Michigan, native trees, shrubs, and other plants were trucked in from other state parks or state nurseries. At Palmetto State Park, materials were donated by an adjoining landowner, and in many other parks commercial sources were used.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

E.P. Meinecke and Campground Planning

The modern campground resulted from marked changes in theory and policy that occurred in the early 1930s. The National Park Service, like the U.S. Forest Service and several state park systems, was concerned with the impact of heavy use and trampling on the vegetation of camping areas. After studying the problem in Sequoia National Park, California Redwood State Park, and other places, the eminent plant pathologist E. P. Meinecke identified the destructive effects that the compaction of roots and other injury to natural vegetation were having on campgrounds and other heavily used areas. In response to the problem, he formulated a theory of camp planning and reconstruction that has ever since influenced the design of picnic areas, campgrounds, and waysides in national and state parks and forests.

In the 1920s, campgrounds were located in open meadows or forests where the understory had been cleared to make way for a loop road and areas for parking and camping. Campgrounds provided water, fireplaces, and a comfort station. Campers parked their cars randomly on open meadows or in cleared areas; they hung tents from the sides of vehicles and set up portable tables.

In Sequoia National Park, giant sequoias planted in the 1920s as older ones were lost failed to regenerate. In 1926, Mather called in E. P. Meinecke to study the problem. Human trampling and construction, Meinecke found, had caused the loss of the great trees and other native plants. He urged that a program of reforestation be introduced to restore these species. The shallow roots of the giant sequoias made the trees especially susceptible to soil compaction and damage during construction. Damage had occurred to the trees during the construction of the Generals Highway and, in the Giant Forest, through years of heavy occupation and visitation.

Meinecke's 1928 report on similar problems in the California state parks brought widespread attention to the impact that heavy concentrations of tourists in certain areas had on the surrounding vegetation. Compaction of soil and roots by constant trampling and automobile traffic and was a serious threat to the native ground cover, trees, and shrubs and thus meant "a slow but steady destruction of the very features that make these localities attractive." The problem lay in the constant repetition of the injurious action, day after day and year after year. Nationwide, campgrounds had become unappealing places and were being abandoned. Not only was vegetation dying, but car tracks, the cutting of wood for fuel, and remnant ashes added to the decay.¹⁶⁰

To remedy the problem, Meinecke urged greater regulation of camping areas and recommended revolutionary changes in campground design and management. In 1932, the Forest Service issued a *Camp Ground Policy*, which set forth Meinecke's ideas. Foremost was the selection of sites based on the type of soil. Preference was to be given to areas with light sandy soils and to places such as Longmire at Mount Rainier where the ground was richly strewn with round boulders from an old river bed and whose interstices were filled with rich soil that could support tall trees. Length of seasonal use was another important consideration. At high elevations, where use seldom exceeded three months, the

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

probability of compaction was less than at lower elevations in mild climates, where use was longer and where frost heaving and snow cover to break up the compaction did not occur. Type of vegetation was important for a campground's desirability and usefulness. Designers were to consider the composition and density of the vegetation as well as its distribution to determine which plants and trees were to be saved, which were to be cleared, and which were to be given special protection by stone or log barriers. Some trees, including quaking aspens, lodgepole pines, sugar pines, and thin-barked species, were particularly endangered by campground use. The final consideration was the type of camper.¹⁶¹

Equally important was campground planning. Meinecke proposed dividing campgrounds into individual campsites, each offering privacy, shade, and amenities such as a tent site, table, and fireplace. Roads and campsites were to be laid out in such a way that the vegetation was preserved. Meinecke's plan minimized the chances that cars would leave the road and damage vegetation. The campground was reached by a well-planned system of one-way roads from which "garage" spurs extended at angles. One-way roads worked best because new roads could be added as the demand for more spaces increased; they were narrower, requiring less space, and they encouraged a smooth flow of traffic. Individual campsites were delineated, each consisting of a parking space and a clearing equipped with a fireplace and a camp table fixed in place and a tent site. Logs, stones, or vegetation defined each camping site, while large logs or boulders marked roadways, road spurs, and parking areas. Vegetation interfering with or unlikely to survive under camp use was cleared. Remaining trees and shrubs, however, were protected from the automobile by placing large boulders at the corners of intersecting roads and where parking spurs branched off the main road. Trees and shrubs between campsites were to be retained. As screens, they enclosed each campsite and afforded campers privacy; they also provided the natural setting that visitors had come to experience.

Restoring old campgrounds, a problem the park service had been working on in Yellowstone for many years, was a far more difficult task. Meinecke reiterated his recommendations to introduce one-way roads, garage spurs, and fixed fireplaces and to protect key trees by placing boulders along roadways, at corners, and around garage spurs. In 1932, Meinecke encouraged planting trees in campgrounds temporarily withdrawn from use to restore vegetation. He wrote, "By the planting of native trees at strategic points in close imitation of the natural type the site can slowly be brought back again for future use. Landscaping in the usual sense of the word has no place in the mountain camp where the visitor seeks the illusion of wilderness." By 1932, the overall condition of existing camping areas in public forests and parks was dismal. Meinecke recommended a system of camp rotation, whereby new grounds were opened and older ones closed until the vegetation could recover by natural processes or planting.¹⁶²

The National Park Service shared the forest service's concern for deteriorating campgrounds. The loss of trees was a foremost concern, and in

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

addition to efforts to close the Giant Forest campground in Sequoia, planting projects had been attempted at several campgrounds in Yellowstone in the 1920s. About 1928, the park service began urging the construction of fixed fireplaces. At this time at Grand Canyon a model stove was devised; it was only 10 to 14 inches in height and fashioned in local stone to give the camper the effect of being around an open camp fire.¹⁶³

Meinecke's policy on campgrounds was circulated among park designers in the National Park Service and major changes began to appear in the campgrounds. As a result, park campgrounds began to incorporate defined roads, paths, and campsites and provided barriers of stone and log to control traffic and parking so that heavy use of the grounds would not damage the root systems of surrounding shrubbery and trees. Meinecke's advice on using irrigation and spring sites to plant cottonwoods to prepare shady campgrounds was followed at Zion and other places in the Southwest. The term "meineckizing" campgrounds became a common term among landscape designers and CCC supervisors in the 1930s and continued to be used into the 1950s.

Meinecke's theory applied to the development of picnic grounds as well. He urged that picnic areas be separated from campgrounds and recommended a similar one-way road system leading to a number of parking spurs arranged in a herringbone fashion to alleviate traffic problems and use the space most economically. Fixed fireplaces, either individual or community, were also essential to regulating picnic area use.¹⁶⁴

In 1934 Meinecke expanded his theory in *Camp Planning and Camp Reconstruction*. Here the campground was viewed as a community of roofless cabins. The grounds were subdivided into individual sites, or "lots," off of permanent one-way service roads. As before, the essential components of each site were the garage spur and the permanent hearth or fireplace, table, and tent site. The 1934 manual was a more comprehensive guide to planning campgrounds, treating vegetation in greater detail, and developing a flexible system of service roads arranged in tiers that could be adapted to different conditions and enlarged over time. The 1934 manual reflected a greater awareness of landscape and ecological concerns, the treatment of vegetation, and the possibility of reintroducing vegetation through transplanting. It expanded upon the environmental hazards faced by certain trees and plants that were susceptible and sensitive to invasion by man. Meinecke pointed out that old oaks with the broad open stretches of grass under and between them were less endangered by public use than are the dense groves of short aspens and high-altitude pines of the mountains. The sudden letting in of strong sunlight and of winds in itself effects changes from which trees suffer and to which they have difficulty in adjusting themselves.¹⁶⁵

Although park designers followed Meinecke's manual, campgrounds continued to be one of the service's most serious problems. The National Park Service secured Meinecke's services as a consultant in the 1930s to advise on problems in Yellowstone, Grand Canyon, Yosemite, Mesa Verde, and other parks. Improvements continued to be made in the design and standardization of the designs for campground layouts, camp tables, and fireplaces. Meinecke's

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

recommendations revolutionized camping in the national parks and forests in the 1930s and also determined the design of campgrounds in state parks and forests by the Civilian Conservation Corps. In addition, his findings shed greater light on the damage caused by automobiles and pedestrians on the natural vegetation of national parks, causing park designers and managers to reassess the accessibility of automobiles to forested areas and consider the need for defined footpaths across fragile areas of vegetation, such as the alpine meadows at Yakima Park. His ideas also fueled the Landscape Division's request for funding for improvements such as sturdy curbs, graded paths, and delineated parking areas.

1932 Study on Park Policies

In 1932, Louis C. Cramton, special attorney to the secretary of the interior, conducted a study of the *Congressional Record* and all other legislative documents relating to Yellowstone National Park to determine what Congress, in establishing the park system, intended the national parks to be and what policies it expected would govern the parks. Formerly a member of Congress and chairman of the Interior Subcommittee of the House Appropriations Committee, Cramton had been instrumental in building the financial structure of the national park system.

Cramton's findings resulted in a statement of policy that was published in the 1932 annual report. The statement clarified and codified the various policies that had evolved since 1916 concerning the establishment, preservation, protection, maintenance, use, and enjoyment of the national parks. First, the statement clarified the issue of criteria for national parks, stating that preservation should depend alone on the outstanding scenic, scientific, or historical quality and the resulting national interest, regardless of an area's location or proximity to population centers or the financial capacity of a state. National interest was defined as widespread interest and meant that a park should appeal to many individuals, regardless of where they lived, because of its outstanding merit.¹⁶⁶

The statement upheld the twin purposes of parks: they should be accessible to the public for enjoyment and use, and they should remain unspoiled for future generations. The statement upheld the 1930 policy excluding exotic plants and wildlife from the parks and prohibited the capture of fish and game for commercial purposes and the destruction of animals except those "detrimental to the use of the parks." Timber was to be cut only when necessary to control attacks of insects and disease or to otherwise conserve the scenery or significant natural or historic objects. The removal of dead timber was allowed where it was necessary to protect or improve park forests.¹⁶⁷

The statement placed the responsibility for retaining these areas in their natural condition in the hand of park administrators. Forestry, road building, and wildlife conservation were recognized as special problems, and park administrators were called upon to define the objectives for these programs "in

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

harmony with the fundamental purposes of the parks." In issues related to forestry, the National Park Service was to consider scenic values and the goal of preservation. In the building of roads, the service was to ensure that "the route, the type of construction, and the treatment of related objects" contributed to "the fullest accomplishment of the intended use of the area." In wildlife conservation, the "preservation of the primitive" was to be sought rather than the "development of an artificial ideal." Coming on the eve of the New Deal, Cramton's study laid down a firm philosophy and guidelines for the work of the Civilian Conservation Corps and other government relief programs in national parks during the next decade.¹⁶⁸

A Process of Park Planning

The 1918 statement of policy of the National Park Service called for planning before design and construction. The early development schemes and the town plans for Yosemite Valley and Grand Canyon Village were efforts to fulfill this requirement. In 1925, however, the National Park Service began to give serious attention to comprehensive park planning that coordinated the development of roads and trails with the development of park villages, ranger stations, and maintenance areas. For the first time, planning was applied to the park as a cohesive unit with interconnecting circulation systems and designated areas to serve administrative and other needs. The impetus for planning came from the increased funds for roads and trails and the need to schedule projects over a five-year period. In 1925, Daniel Hull began working with Mount Rainier's superintendent to plan for the park's future and coordinate the development of much-needed roads and trails with a vision for opening additional areas of the mountain to visitors. At the superintendents' conference that year, superintendents were directed to draw up five-year plans to meet the future needs of their parks.¹⁶⁹

The first plans outlined five-year programs for the expansion and improvement of developed areas of the parks, such as administrative centers and park villages. Park superintendents drew up separate plans for road and trail construction, which was being funded on a larger scale and was phased in over several years. The first five-year plan was developed for Mount Rainier National Park and was submitted to Director Mather in September 1926. A plan for Crater Lake was developed in 1927. These plans listed the existing facilities alongside an itemized list of improvements needed within a five-year period. Although most improvements called for the construction of buildings such as sheds, comfort stations, or residences, a number called for extensions to campgrounds and landscape improvements.

Park superintendents could use these plans to develop a strategy for meeting the demands of increasing visitation over a period of five years and to justify requests to fund improvements and new construction. The five-year plans enabled the park superintendent to identify the areas within the park requiring development for various purposes, such as ranger stations, "village" services, maintenance, park administration, educational facilities, fire protection, and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

shelter for hikers in remote areas. These were plotted in relationship to existing and proposed roads and trails within the park and to approach roads outside. Furthermore, the plans enabled the superintendent to coordinate the administrative needs of the park with the concessionaire's services.

The superintendents' concerns in the planning process were numerous: the location of park facilities; the function and form of park structures; the circulation of traffic to the park and to key points within the park through roads, trails, and in some cases, railroads; the provision of safe access to points of scenic beauty and outstanding natural features; the management and protection of the park through patrol trails, patrol cabins, fire roads, fire equipment, and fire lookouts; maintenance facilities; and the comfort of visitors, primarily through concessionaire's services such as food, lodging, and gas. These concerns could easily come into conflict with the goal of preserving the parks' natural character. Ever present, therefore, was the concern that the park landscape be left unimpaired and that the service's dual mission be upheld.

Planning required accurate and current information. At the request of park superintendents, the service's civil engineers carried out surveys and made updated topographic maps that recorded not only natural features, contours, waterways, and existing structures, but also important trees and rock formations. Although park planning was viewed primarily as the responsibility of the Landscape Division, it involved coordination with the Engineering Division, which provided accurate topographic information and was responsible for utilities and minor roads; the Educational Division, which was interested in building museums, nature trails and gardens, and interpretive shelters; and the Forestry Division, which was responsible for the protection of the park's forests.

Under Vint's leadership, five-year plans evolved into a program of comprehensive planning that coordinated the service's growing programs and brought together the divergent interests of landscape preservation and park development into a single, fully orchestrated vision for the future. In 1929, park development plans became mandatory. The plans were intended to give a general picture of the park showing the circulation system (roads and trails), the communication system (telephone and telegraph), wilderness areas and developed areas.

The plans contained three parts to be developed in sequence over a three-year period. First was the park development outline that listed the various areas of the park and their components. Next was the general plan, a graphic representation of each particular area. Third was the six-year plan, which was a list of the various projects required to complete any portion of the plan. Projects included the construction of new facilities and the removal of obsolete ones.

Superintendents were responsible for the development outline and were asked to include what they needed to properly develop an area over several years, assuming funds were available. The park development outline was intended to be a written statement of all items necessary for the development of the park,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

while the six-year plan enabled superintendents to schedule construction and improvements progressively over six years. The maps and graphic records accompanying the outline were to be updated annually owing to the steady progress made in the construction of roads and trails and other facilities.

The plans served as a tool for landscape preservation by identifying important viewpoints and vistas, stands of trees, and rock formations that were to be preserved and protected. The plans served as a guide for cleanup operations by calling for the elimination of unsightly or deteriorated buildings and structures that, in many cases, predated the organization of the National Park Service. Most importantly, the plans indicated the areas of each park that could be developed and the extent to which development could take place. All other areas, called wilderness areas, were to be left undisturbed by development other than trails, trailside shelters, and patrol cabins. This was in keeping with the idea that the master plan was a blueprint for the future. Plans also identified "sacred" areas, which were to be protected from development or other forms of disturbance. Selected for their pristine condition, sacred areas were small zones or designated features, such as the area within a one-eighth-mile radius of Yellowstone's Old Faithful Geyser or Yosemite's Sentinel Rock. Such areas were inviolate and to remain unimpaired. In the 1930s, research areas were added to the list of areas specially designated for preservation; these areas were reserved for the scientific study of plants, animals, and other natural features and were accessible only by trails.

In 1931, Congress passed the Employment Stabilization Act, requiring all government bureaus to prepare six-year advance plans on which federal appropriations for construction could be based should an economic emergency occur or should the depression continue. Agencies were to provide cost estimates for carrying out plans to the Employment Stabilization Board. As a result, the Landscape Division undertook the work of future planning on an unprecedented scale. Vint's staff made substantial progress on the general development plans based on the development outlines superintendents had prepared the previous year. The plans at this time showed the development scheme for an entire park and covered road and trail systems, fire-control plans, and the general layout of all developed areas including utilities, buildings, and roadways. In some cases, drawings were included in the plans to illustrate a special type of wall, guardrail, or other detail to be used at a certain place in the park.

The term "master plan" was applied to the general development plan in 1932, when Director Albright spoke before the twelfth meeting of National Park Executives in Hot Springs, Arkansas. Albright spoke of these plans as the domain of architecture and landscape architecture and stated that the primary function of the Landscape Division was to prepare the plans for all parks in the East and West. By the end of 1931, development outlines and general plans had been prepared for every park; by the end of 1932, a six-year outline had also been prepared for each park.¹⁷⁰

Each plan began with a statement of the park's purpose taken directly from

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

the legislation establishing the park. The location of the park and its relationship to state highway systems and nearby population centers were described. The roads and trails were broken into sections and distances that required either improvement or construction. The major development areas were the park villages having many functions and both concessionary and government facilities, such as the valley floor at Yosemite or Yakima Park at Mount Rainier. Plans for major development areas included buildings and structures related to park administration; concessionaire facilities; utilities such as power, telephone, sewerage, and water systems; minor circulation systems of paths and roads; vistas; and in some cases, existing vegetation or natural features that should be protected or retained. The minor development areas were outlying areas serving one or a small number of several functions. They included ranger stations, park entrances, campgrounds, and areas developed with parking and paths for viewing scenic waterfalls and other features. One such area was Chinguapin Intersection in Yosemite, where the Wawona and Glacier Point Roads converged and a ranger station, comfort station, and combination gas station and lunchroom provided visitor services.

From 1932 to 1942, master plans were revised annually. They plotted existing construction and recommended changes in the form of new construction and removal of existing features. They also noted important vistas, areas of vegetation, and individual trees or rock formations that merited preservation. The plans reflected an integrated approach to park planning and management and were based upon an understanding of the significance and purpose of the particular park.

While the landscape architects were responsible for preparing the plans, they made no administrative decisions. They were employed in an advisory and professional capacity. Plans were drawn up as recommendations for the approval of the park superintendent, the division chiefs from the Western Field Office, and the director. Later the regional directors and the regional landscape architects, architects, and engineers became involved in the decision-making process. The plans also facilitated the review of concessionaires' plans for expansion, by spelling out the extent of development that was considered reasonable to accommodate public use and comfort. Drawings for individual projects plotted on the plans were made as funds became available for construction, reviewed for consistency with the master plans, and approved separately. Planning made it possible to program the funds and phase projects according to funding, personnel, and needs. At this time, the Landscape Division became the Branch of Plans and Design.¹⁷¹

When employment stabilization and relief funds became available in 1933, the National Park Service was equipped with comprehensive plans and, in many cases, actual drawings. The service was ready to begin construction. The efforts that park service officials and Vint's staff had put into advance planning brought immediate results in the form of public works funding and emergency conservation work performed by the Civilian Conservation Corps.

During the 1930s, capital improvements in the form of roads and buildings were funded through public works or regular park funds and the use of private

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

contractors and skilled labor. The coordination of public works projects with emergency conservation work enabled parks to make substantial progress on the master plans. From April 1933 to March 1936, resident landscape architects worked closely with the landscape architects and architects assigned to the Civilian Conservation Corps camps. In 1936, design services were consolidated in regional offices for Emergency Conservation Work that became the National Park Service regional offices a year later. As park development proceeded, the plans were updated. The annual plans visually charted the impact of New Deal construction and conservation programs on national park development. The completion of many plans believed unattainable in 1932 was realized within a decade.

What had been conceived as advance planning for the construction of roads, trails, and facilities by the end of the 1930s encompassed all aspects of park administration. To a large extent, the plans addressed issues of interpretation, forestry, fire control, engineering, scenery preservation, automobile traffic, pedestrian circulation, and concessionaires' operations. During the 1930s, the development plans included, in addition to site plans, sheets on vegetation, fire control, utility layouts, geological formations, and wildlife areas and provided housing and road inventories and interpretive statements to guide the service's growing programs.

In 1939, the park service issued *Master Plans: A Manual of Standard Practice for Use in the National Park Service*, to be used in developing the plans for 1941. This was the first comprehensive manual for completing plans, which after 1937 had been drawn up by the design staff of the regional offices. By this time, the process for developing plans was extensive and required data and preparation by specialists outside of the Branch of Plans and Design. The plans mirrored the expanding programs of the park service and the increasing numbers and types of parks entering the park system in the 1930s.¹⁷²

The master plan had become the "controlling document for all development." The plan retained the format of a general development plan and a development outline. The general development plan, sometimes called a zoning plan, graphically illustrated all existing and proposed elements of the park's ultimate development and indicated the ownership and use of adjoining lands. The development outline now called for detailed sheets for each program area and served as a working tool to coordinate the needs of expanding park programs. The superintendent was responsible for coordinating the field activities of the various specialists, and the Branch of Plans and Design was responsible for compiling the information and interpreting it graphically.

As the United States entered World War II, the Civilian Conservation Corps ended and public works funding ceased. The preparation and revision of plans slowed dramatically during the war, and, except for new national parks such as Big Bend, planning virtually ceased. Most staff had gone into the armed services or were working for the war effort. Those who remained spent their time working on "unsettled problems and policies that influence park development," since no funds were available for construction. The process of master planning that Vint had spearheaded in 1930 withstood the test of time

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

and was revived as the essential planning tool following the war. ¹⁷³

National Parks during the New Deal

Beginning in the spring of 1933, New Deal programs made possible the development and improvement of national parks at an unprecedented speed. In the early 1930s, several parks, including the proposed Shenandoah park, were already receiving aid through a fledgling program of emergency appropriations instituted as the nation's concern for economic stabilization grew. The programs implemented by President Franklin D. Roosevelt to boost employment in early 1933 provided the impetus for a massive expansion of park development, from the construction of roads and administrative facilities to forest preservation, landscape naturalization, roadside cleanup, and campground construction. Above all, the programs of the 1930s put into operation and proved the value of the master planning process that had been spearheaded by the Landscape Division under Thomas Vint.

The two major programs to affect the development of the national parks were (1) federal projects funded by emergency appropriations and administered through the Public Works Administration (PWA) and (2) Emergency Conservation Work (ECW) carried out by the Civilian Conservation Corps (CCC). The Public Works Administration channeled special allotments to fund capital improvements in the national parks, such as roads and buildings. The work itself, including the clearing, grading, and surfacing of roads and the construction of bridges, culverts, and guardrails, was carried out according to National Park Service standards and designs with skilled labor provided by private contractors. ECW, on the other hand, was an interagency effort involving the Departments of Labor, Army, Interior, and Agriculture and administered by an interagency advisory board. From the beginning, the program was intended as a temporary emergency measure and required reauthorization periodically. In 1937, the program became an independent agency and was extended for several more years. At this time, the program was officially renamed the Civilian Conservation Corps and all references to Emergency Conservation Work were dropped.

ECW was carried out by camps of CCC enrollees assigned to each park; it consisted largely of forest protection, cleanup, landscape naturalization, trail construction, village improvements, roadside planting, and the construction of small park structures such as trail bridges. It later included the construction of larger projects. All conservation work was under the direct supervision of the resident landscape architect for each park, while other park specialists, such as naturalists and foresters, directed work related to their programs. The CCC technical staff--architects, landscape architects, and engineers--were actually employed by the National Park Service through ECW funds.

In addition to this influx of funds and manpower, the National Park Service acquired responsibility for a number of new sites in this period. Several other administrative actions and relief programs had turned over new areas such as monuments, historic sites, parkways, and national seashores to the park

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

service. Under Executive Order 6166 of June 10, 1933, the monuments and public grounds of the nation's capital, an assortment of national monuments previously under the U.S. Forest Service, and many battlefields and military cemeteries previously under the War Department were brought under the stewardship and management of the National Park Service. Moreover, in 1934, in cooperation with the new Federal Emergency Relief Administration (FERA), the National Park Service assumed leadership for nationwide recreational planning and began to develop model parks called recreation demonstration areas on land considered submarginal for agriculture. Once developed, these parks were to be turned over to state park systems. This role was strengthened by subsequent legislation solidifying a cooperative partnership of national and state park officials begun initially through the National Park Service's supervision of ECW in state parks. In addition, grants through the Works Progress Administration, established in 1935, added substantially to facilities in both national and state parks.

Public Works Administration

The Public Works Administration (PWA) was created by Executive Order 6174 on June 16, 1933, under the authority of Title II of the National Industrial Recovery Act (48 Stat. 200). The order called for a comprehensive program of public works "to increase the consumption of industrial and agricultural products by increasing purchasing power, to reduce and relieve unemployment, to improve standards of labor and otherwise to rehabilitate industry, and to conserve natural resources." President Roosevelt appointed Secretary of the Interior Harold L. Ickes administrator of the new agency.¹⁷⁴

The PWA administered the program of federal and nonfederal works through allotments. Federal projects received funding based on their value to national planning and their role in fulfilling comprehensive plans prepared in advance. As a result, the National Park Service received funding for greatly needed capital improvements in all the parks and monuments. Projects ranged from the development and improvement of trails, roads, and water systems to the construction of a wide range of park buildings and structures, the most common of which were comfort stations, ranger stations, patrol cabins, fire lookouts, garages, residences, and maintenance shops. Some parks received funds for administration buildings and museums. Others received funds for campground development. Existing buildings in many parks were added to, improved, and adapted for new uses using PWA funds. Restoration projects were undertaken in national monuments, such as Casa Grande.

In the West, the influx of funds enabled the park service to build long-needed facilities and add to the administrative infrastructure required to meet the demands of increasing visitation. The development of facilities in the national monuments, such as Casa Grande, Petrified Forest, and Tumacacori Mission, received for the first time a regular source of funding. In the East, PWA funds made possible the development of facilities in the numerous memorials, battlefields, and reservations that had come into the system in

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

1933. PWA funds also made possible the acquisition of important land areas for the Blue Ridge Parkway and the construction of the Department of the Interior Headquarters in Washington, D.C.

During the first year of the PWA, the National Park Service received approval for roads and trail work valued at \$17,059,450 and other physical improvements valued at \$2,145,000. The master plans prepared by Vint's office during the preceding two years provided a ready-made outline of work projects that could be put into action immediately to provide relief to the unemployed. Work was done under contract with skilled labor subject to specifications drawn up by the landscape and engineering divisions. Resident landscape architects reviewed the progress of each project and approved the completed work.

Although the public works programs emphasized construction, this work had a strong relationship to the landscape design of the parks. First, all projects were based on master plans and as such shared the larger concern for site development and conformed to the principles for landscape protection and harmonization that underlined all park development. In addition, projects such as the stockade around the service area at Mount Rainier's Yakima Park and the fence and entry gate at Tumacacori Mission, although structural in nature, were important landscape features.

In 1933, the Branch of Plans and Design, was given full responsibility for producing building plans, specifications, and estimates. In July 1933, when the first public works allotments became available, Vint (who was now called chief architect) had a staff of fifteen, which included a structural engineer as well as many landscape architects with varying degrees of experience. Most of these were resident landscape architects assigned to one or more parks in the West and were directing the landscape work of the CCC. Within two months, however, Vint's office had expanded dramatically. New members included architects and engineers as well as landscape architects with the skills to carry out the drafting and engineering required by the accelerated construction program. By November 1934, twenty-four additional designers had joined Vint's staff in San Francisco. All the design of working drawings for the western parks was now done by staff assigned to the San Francisco office. The resident landscape architects continued, however, to revise the master plans and review all drawings for their parks. A well-defined approval process emerged involving the park superintendents, the resident landscape architects and engineers, the chief architect, the chief engineer, the chief forester, the sanitary engineer, and the director of the park service.

In late 1934, Vint moved to the park service headquarters in Washington, D.C., to head the Branch of Plans and Design. William G. Carnes was placed in charge of the Western Division, and Charles Peterson remained in charge of the Eastern Division. All designers in the service were consolidated into the western and eastern offices, where the architect, structural engineer, mechanical engineer, specifications writer, and estimator could work together and efficiently complete the massive volume of public works projects.¹⁷⁵

The national parks used PWA funds to build a wide variety of structures, from administrative and utilitarian projects such as patrol cabins, fire

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

lookouts, and blacksmith shops, to landscape structures such as gates and steps, to utility systems and facilities for visitor use. The Western Division received a total of 185 PWA allotments from 1933 to 1937. These allotments covered projects as diverse as steps to the cliff at Montezuma Castle National Monument, the naturalist's residence at Lassen Volcanic National Park, the superintendent's residence at General Grant, barns at Sequoia's Redwood and Ash Mountain headquarters, innumerable snowshoe cabins at Mount McKinley (later Denali), picnic ground improvements at Muir Woods, an administration building at Crater Lake, a pump house and water system at Canyon de Chelly National Monument, and repairs to the lighthouse at Cabrillo National Monument.¹⁷⁶

At Mount Rainier, public works projects included the construction of a stockaded fence at Yakima Park to screen the maintenance sheds, garages, and equipment from public view, thus enclosing the work yard of the park village. Screens of vegetation were impractical in this subalpine terrain, where wind, temperature, and soil conditions hindered tree growth. The design of the stockaded fence was in keeping with the pioneer theme introduced by the blockhouse-style administration building. Public works funds were also used for the construction of log-and-stone comfort stations at the camping and picnic grounds at Yakima Park and a log ranger station and frame warehouse at the White River Entrance. Constructed elsewhere in the park were four fire lookouts, several fire patrol cabins, a number of fire guard cabins and caches, and even an icehouse. PWA funds were also used to develop campgrounds.

At Yosemite, housing demanded much of the designers' attention, and a number of residences were built, in the form of individual homes, apartment houses, and duplexes. There the funds also went toward developing a campground at Tuolumne Meadows, building cabins for the Indian Village, and constructing the Henness Ridge Fire Lookout. In Yellowstone, at the Mammoth Hot Springs headquarters, a large apartment house was built for rangers, and utility buildings were constructed. At Grand Canyon, a community building was built, in addition to many maintenance shops and residences. At new parks--such as Grand Teton--an administration building, entrance stations, and a superintendent's residence were constructed. At Glacier, sorely needed backcountry patrol cabins and fire caches were built, as well as many snowshoe cabins and several boat houses.

In all of these projects, emphasis was placed on principles of landscape protection and harmonious design. In the 1930s, the Branch of Plans and Design relied heavily on the standards and specifications developed in the late 1920s and benefitted greatly from the experience of Punchard, Hull, Vint, and the service's first resident landscape architects, including Ernest Davidson, John Wosky, Merel Sager, Kenneth McCarter, and Charles Peterson. Practices well established by the 1930s were readily incorporated into the public works building program. Designers endeavored to harmonize structures with the natural surroundings by using native materials. Road building adhered to the specifications drawn up by Vint's office and maintained the characteristics that were recognized as hallmarks of national park roads. The landscape designs for bridges, which routinely included elevations and details for arch

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

rings, were increasingly prepared by engineers in the Western and Eastern design offices. The standards for trail construction that had been developed for western parks by Chief Engineer Frank Kittredge in the late 1920s were published as a circular for the parks in 1934, and, through the substantial PWA funds available for trail building, were applied to parks nationwide, including the Great Smoky Mountains and Shenandoah national parks in the East. The concern for naturalism and harmonization that determined the construction of surface trails was also applied to underground trail construction and improvements in parks such as Carlsbad Cavern. As the National Park Service inherited the parkways in the East, including the Mount Vernon Parkway near the nation's capital, and as the Eastern Division gained experience in building linear park roads and parkways--such as Skyline Drive in Shenandoah and the Colonial and the Blue Ridge parkways--major advances were made in the aesthetics, kinetics, and engineering of park roads.

While the principles and practices for park development were standardized, their applications were highly individual based on the unique character of each park and the site and setting selected for construction. The western parks, for example, covered many types of areas, such as forested and wilderness areas, deserts, barren mountainous areas, rocky and treeless areas, areas of heavy rain and snow, and areas of no rain. The Western Division adopted a specific type of building for each location, such as flat-roofed adobe or pueblo structures in the Southwest and log or heavy timber constructions in heavily forested areas. As they adopted these forms, designers acknowledged the cultural influence of Spanish and Indian traditions in the Southwest and the pioneer traditions of covered-wagon days in other parts of the West.

The designs were simple and functional but remained consistent with the architectural themes that had been developed for each park or, in new parks, took on appropriate characteristics drawn from pioneer, indigenous, or other local forms. Designers of utilitarian buildings endeavored to find obscure locations out of the sight of park visitors and simple functional and economical designs that harmonized with the natural setting. Due to the rapid production of drawings and the cost limitations placed on construction, new designs frequently lacked the careful attention to detail that marked the late 1920s and early 1930s.

Specific objectives guided the work of the Branch of Plans and Design during the 1930s. Buildings were to be in harmony with the natural surroundings and secondary to the landscape. All buildings in any one area were to be in harmony with one another, having similar materials and elements of design--for example, roofs of the same type built of the same material and having the same slope. Horizontal lines were to predominate. Stones and logs used in construction were to be in scale with one another and their natural surroundings, providing a well-balanced and unified design. Where large trees and rock outcroppings were likely to dwarf buildings, giving them the appearance of being under scale, stones and logs were to be slightly oversized. Finally, rigid, straight lines were to be avoided wherever possible, imparting the feeling that the work was executed by pioneer craftsmen. This last

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

principle applied to the ends of logs, stonemasonry, ironwork and hardware, and the numerous architectural details that made up a park building.¹⁷⁷

Emergency Conservation Work in National Parks

On March 31, 1933, President Roosevelt signed the Federal Unemployment Relief Act, calling for Emergency Conservation Work on public lands and the creation of a body of unemployed and generally unskilled men called the Civilian Conservation Corps (CCC). Emergency Conservation Work was immediately organized, and in mid-May 1933, the National Park Service was prepared to open 63 camps accommodating 12,600 men for work in national parks and monuments. Chief Forester John Coffman was placed in charge of ECW in national parks. Headed by Robert Fechner until his death on December 31, 1939, the CCC included camps for work not only in the national parks, but also in national forests, wildlife reserves, and state parks and forests, as well as camps working on soil conservation projects. The work of the state park camps was under the direction of the National Park Service, which hired skilled technicians, using ECW funds, to assist in the development and planning of state parks systems. Conrad Wirth of the National Park Service was placed in charge of the state park ECW program. During the first enrollment period, which extended through September 1933, 105 camps were assigned to state park projects in 26 states. By the end of 1933, those working in state and national parks included 35,000 enrollees and approximately 2,300 men in supervisory and advisory capacities.¹⁷⁸

From the beginning, the National Park Service fully supported the social program of the CCC and acknowledged the moral and spiritual value of conservation work. As many as six or seven camps were assigned to the larger national parks at one time. Each was composed of 200 men involved in work projects that would last six months. The park service was allowed to hire a small number of skilled locally employed men, called LEMs, who brought a knowledge of local climate, vegetation, building materials and practices, and environmental conditions. At first enrollees were housed in canvas tents rigged upon wooden platforms arranged in orderly rows. As the CCC became more firmly established, these tent colonies were replaced by sturdier wooden structures, such as temporary Army barracks and other facilities, arranged in a quadrangle around a parade ground and flagpole. Evidence of some camps remains today in the form of concrete pads, paths and plantings, and isolated buildings.¹⁷⁹

Emergency Conservation Work in the national parks made possible work that the park service had been trying to justify under ordinary appropriations, including the landscape naturalization program under Vint's Landscape Division and the forest protection work under John Coffman's Forestry Division. Work undertaken in the first year included forest improvement projects, construction and maintenance of firebreaks, clearing of campgrounds and trails, construction of fire and recreation-related structures, road and trail building, forest fire suppression, survey work, plant eradication, erosion control, flood control,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

tree disease control, insect control, campground construction, and general landscape work. Although forest protection and fire control were envisioned as the primary purposes of emergency conservation work, scenery preservation and improvements in landscape design were viewed as complementary activities.

Emergency Conservation Work was envisioned as a temporary relief measure and continued to be reauthorized through the 1930s. By October 1934, with the expansion of the program and the relaxing of rules regarding the hiring of LEMs, there were 102 camps in national parks and 263 camps in state parks. In 1936, the number of camps in national parks was reduced from 446 to 340, and the size of camps was cut from 200 to 160 men. On June 28, 1937, Congress passed new legislation officially changing the name of the program to the Civilian Conservation Corps, giving it status as an independent agency, and extending it three more years. At this time, park service Assistant Director Conrad Wirth was in charge of the CCC program in both national and state parks and was designated to represent the department in meetings of the CCC advisory council. This coincided with the authorization for the National Park Service to undertake a nationwide recreation study in cooperation with state and municipal authorities to determine regional recreational needs and inventory existing and potential park and recreation areas.¹⁸⁰

Prior to 1937, the supervision of ECW in national parks was entrusted to the Branch of Forestry, under the direction of John Coffman, the chief forester in the Western Field Office. ECW focused on projects for fire control such as the construction of truck trails and telephone lines, protection of trees against white pine blister rust through the eradication of ribes species, road clearing and planting, prevention of soil erosion, and beautification projects (many of which would now be considered ecologically harmful) such as the clearing of dead trees from Jackson Lake in the Grand Tetons and the sites of destructive forest fires in Glacier.

National park policies based on the enabling legislation and the 1918 and 1932 statements of policy, including the preservation of scenic values and natural features and the ban on exotic plants and animals, were upheld in the CCC work in national parks from the beginning. They were strongly stated as "fundamentals and policies" in the letters of park superintendents welcoming CCC camp superintendents to the national parks.¹⁸¹

CCC camp superintendents were to cooperate closely with national park staff, including the chief ranger, the park engineer, the general foreman, the park fiscal agent (who was the assistant superintendent), and the naturalist. Service specialists, including the chief architect, the fire control expert, and the chief engineer from the Western Field Office, were also to be involved in camp projects. During the first six periods, which extended from April 1933 to March 1936, the park resident landscape architects, who were employed by the Branch of Plans and Design, worked closely with the architects and landscape architects hired by the park and assigned to one or more CCC camps within the park.

The resident landscape architects were to have "full charge" of all matters pertaining to the protection of the landscape and important natural features.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

This work was considered second in importance only to protection against fire and other destructive elements. Work was broken into jobs that could be completed during a six-month period, beginning in April 1933. Some parks had active camps all year round, while those in colder, more rugged climates operated camps only from April to October. Camp superintendents and park landscape architects filed quarterly and semiannual reports of the work completed. Progress was measured in terms of man-days spent on each project. Each job received a number based on a classified system of work tasks. This approach favored small projects that could be completed in a relatively short time. Large projects were broken down into a series of smaller ones that could be carried out consecutively. A single project, such as the landscape development at the mouth of Bright Angel Creek in Grand Canyon near Phantom Ranch, often consisted of many jobs extending over several enrollment periods.

Distance, natural conditions, and a lack of tools made many projects difficult and time-consuming. One the most extensive cleanup projects was at Jackson Lake in the newly created Grand Teton National Park. Here cleanup took several years. Two separate CCC camps, each with 200 men, were assigned the task of clearing fallen and dying timber from the lake and surrounding shore. Conditions were primitive, equipment lacking, and the work extremely tedious. Work entailed cutting debris and hauling it to places where it could be piled and eventually burned when weather conditions allowed. Camps were set up in remote places. Thousands of acres were eventually cleared, and the lake achieved the scenic character that has drawn visitors for decades since. Large-scale cleanup projects were also carried out in Glacier where forest fires had ravaged the landscape and left burnt and decaying timber.¹⁸²

At the beginning of the ECW program, park superintendents had been asked to outline the work that the CCC could accomplish in their park. The prospectus for CCC work at Yosemite listed work under the following categories: roads or fire motorways, fire buildings or structures, fire lanes, fire trails, bridle paths and other trails, insect control projects, blister rust control projects, type-mapping projects, forestry projects, proposed telephone construction, planting operations, roadside cleanup and landscaping, cleanup operations in cut-over areas, reclamation of meadows, and miscellaneous operations. Conservation work was dominated by projects for fire control and forest protection. Planting operations included the reforestation of approximately 320 acres in the vicinity of the Crane Flat fire lookout and small planting projects for landscape purposes in Yosemite Valley and other places. Roadside cleanup planned for approximately twenty-eight miles of the new Wawona Road called for the removal of snags, dead trees, and trees felled during insect control work. Especially important were the "flattening, rounding, and planting of cut banks for erosion control." Cleanup operations were slated for areas that had been logged near Chinquapin, Eleven Mile Meadow, Wawona, Crane Flat, and Merced Grove. Old lumber camps were to be removed, dangerous trees cut, underbrush thinned, and old shacks, fences, and trash removed in various areas. Sixteen hundred acres of meadow at Wawona, Tuolumne Meadows, and Yosemite Valley were to be reclaimed by clearing the small growth that was

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

"choking out" the beautiful meadows. Miscellaneous operations included erecting a twelve-mile fence along one side of the park boundary to eliminate grazing, allow reforestation, and prevent erosion. They also included campground construction, the painting of exposed surfaces of fresh rock cuts along the Wawona Road, drainage of meadowland for mosquito control, selective clearing for vistas, and collection of survey data for conservation work.¹⁸³

Emergency Conservation Work covered many of the activities that Vint had included under landscape naturalization. It also covered many projects that called for a combination of supervision and unskilled labor, such as the construction of minor roads, particularly truck or fire roads, which were constructed to lay gently upon the land but often allowed steeper grades than public roads. As the CCC program proceeded, more and more attention was given to landscape projects, community improvements, recreational development, and the construction of visitor facilities. Rounding and flattening the slopes of recently completed roads to control erosion and blend the cut and fill sections of road with the natural setting was one of the most important landscape projects carried out by the CCC in national parks. Transplanting and planting wild vegetation was also an important activity in most camps, and CCC work followed the best nursery practices of the day. Great care was required in transplanting trees and shrubs from construction sites or obscure parts of the park to areas where screens were needed or construction scars naturalized.

As a result of master planning and the supply of funds and labor from various sources, park designers were able to coordinate large-scale and small-scale projects and treat development in a comprehensive way, from the selection of locations to the grading and planting of building sites to conceal construction scars and blend the final development harmoniously into the surrounding environment. Through this process, park designers achieved an illusion that nature had never been disturbed. Trees and shrubs selected for protection and preservation during the siting process became indistinguishable from transplanted plants. Sod, grasses, and perennial wild flowers were equally important to achieving naturalistic scenery, whether around a residence or administration building or alongside a road. So successful was landscape naturalization that, in most parks, it is impossible today to distinguish the planted vegetation from the natural and the construction site from its undisturbed setting.

The development of Chinquapin Intersection in Yosemite National Park, where the Wawona and Glacier Point roads come together, illustrates how the National Park Service's programs for road construction, building construction, and landscape naturalization were coordinated through the New Deal programs. Chinquapin was an important stopping point on the road between the valley and Wawona. It was a convenient place to provide comforts and information to the public and to patrol a portion of the park boundary needing deer protection during hunting season. A concessionaire had built a store and gas station here in the 1920s, but the buildings had burned.

Completion of the new Wawona Road in 1933 made possible the construction of the new Glacier Point Road. The master plan for the intersection called for a

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

complete administrative unit consisting of a ranger station, a comfort station, and a gas station with a small refreshment stand arranged around a plaza area connecting the two roads. The Wawona Road at this point followed a wide sweeping curve, and the Glacier Point Road dissected the arc and extended uphill behind the gas station. The ranger station and comfort station were constructed under contract through funds provided by the Public Works Administration; with shake roofs, shed-roofed porches, and painted horizontal siding, they reflected the pioneer-era construction of the surrounding region. The projects were carried out under the supervision of the park's engineering department, with the assistance the park's resident landscape architect. The combination gas station and lunchroom opposite the ranger station was built by the concessionaire under private contract with the approval of Vint's office. This building too had the horizontal painted redwood siding, steeply sloped overhanging shake roof, and stone-faced foundations. In 1934 and 1935, the CCC carried out the landscape improvements that were part of the overall design for the plaza. The area was graded, the steep hillsides behind the gas station and comfort station were flattened and sloped, and log curbing was installed along the roadway, islands, and parking areas. Beside the ranger station, a view was cleared and a viewing area designated by the flagpole and plantings. Trees, shrubs, predominately chinquapin (*Castanopsis sempervirens*), and flowers were planted throughout the site and included willows (*Salix spp.*), cherry (*Prunus spp.*), manzanitas (*Arctostaphylos mariposa*), ceanothus (*Ceanothus spp.*), buckthorn (*Rhamnus californicum*), ferns, and mountain currants (*Ribes spp.*).¹⁸⁴

Vint's program for landscape naturalization and roadside planting received an immediate boost in 1933 when Emergency Conservation Work began in the national parks. Interest in the "finishing" work of landscape naturalization had arisen, and park designers were just beginning to understand the aesthetic and economic advantages to planting the flattened and rounded slopes along new park roads. In 1931 the first funds for this work were programmed. Now, suddenly, a strong body of labor was available and ready. Through the Civilian Conservation Corps, the service also had an opportunity to hire many well-trained unemployed landscape architects to supervise the work.

Roadside naturalization was a twofold process requiring that slopes be graded naturalistically to form concave and convex curves at a ratio of depth to height of at least 3:1, and preferably 4:1. Revegetation was accomplished either through the natural process of recovery or through the planting of native sod, grasses, ground cover, perennial plants, shrubs, and other forms of vegetation. Duff removed before construction was placed on the slope in either case. Planting also often required stabilization of seeded slopes by embedding rocks in the slopes or building temporary wooden cribbing to keep the soil in place until roots could take hold.

The naturalization of banks after road and trail construction became one of the most important and widespread of all CCC projects. It played a vital role in controlling slope erosion as well as having lasting value for beautification. Great effort was taken to blend the planted vegetation into

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

the natural setting of the roadside. Techniques were developed for what became commonly known as bank blending in which slopes were shaped to form an irregular line extending into the adjoining woods or meadow and planted with the same native species. In one project in Sequoia, approximately eighty thousand plants were used in eight miles of roadside planting; these consisted largely of ceanothus (*Ceanothus spp.*), yerba santa (*Eriodictyon californicum*), bush poppy (*Dendromecon rigida*), lupine (*Lupinus spp.*), manzanita (*Arctostaphylos spp.*), yucca (*Yucca whipplei*), and flannel bush (*Fremontia californica*).¹⁸⁵

At Yosemite, as a result of the cooperation between the Landscape and Education divisions, a successful planting program got under way along the newly completed Wawona Road. The program began as an experiment but would have lasting success and would influence the design of park roads for years to come. CCC enrollees collected the seeds of native flowers, shrubs, and trees. Under the direction of ecologist Dr. Frederic E. Clements of the Carnegie Institution, a new method of planting seed was attempted along the Wawona Road. Previous efforts to stabilize slopes by digging pockets for seeds to germinate had failed. Under the new method, small trenches were dug laterally along the slopes, seeded, and then filled with duff and topsoil. The following shrubs, trees, wild flowers, and ground covers planted: California poppy (*Eschscholtzia californica*), lupine (*Lupinus nanus*), baby-blue-eyes (*Nemophila menziesii*), clarkia (*Clarkia elegans*), globe gilia (*Gilia capitata*), tarweed (*Madia elegans*), fiddle-neck (*Phacelia tanacetifolia*), agoseris (*Agoseris heterophylla*), yerba santa (*Eriodictyon californicum*), columbine (*Aquilegia truncata*), spice bush (*Calycanthus occidentalis*), owl's clover (*Orthocarpus purpurascens*), Indian pink (*Silene californica*), collinsia (*Collinsia bicolor*), eriophyllum (*Eriophyllum confertiflorum*), nightshade (*Solanum xantii*), blue-eyed grass (*Sisyrinchium bellum*), meadow foam (*Floerkea douglasii*), and fivespot (*Nemophila maculata*).¹⁸⁶

Another important development of the roads program during the 1930s was the design of overlooks for scenic roads. The development of the Hazel Mountain Overlook in 1935 on the east side of Skyline Drive along the Blue Ridge in Shenandoah National Park illustrated the extent to which naturalistic practices became integrated in the work of the CCC. The overlook was sited along the natural contours of the ridge and was centered on a picturesque outcrop of granodiorite having a dramatic pattern of jointing. Curvilinear stone walls sprang from each side of the outcrop to provide a barrier for cars and a guardrail for visitors. Stone steps built into the outcrop led to the top, where one could view the dark hollows and farmlands below. The parking area was separated from the drive by an island, edged in stone and densely planted with native pines, oaks, and an understory of mountain laurel (*Kalmia latifolia*) to screen the sight and noise of traffic on the drive and to blend the overlook with the natural slopes beyond the drive.

Roadside cleanup was another common activity of CCC camps. It entailed clearing dead and decaying brush and fallen trees along park roads and removing trees and vegetation that made roads unsafe. This work had begun in

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Yellowstone in the mid-1920s with donated funds and, by 1930, was covered by appropriated funds as a cost of maintaining and improving roads. Extensive cleanup was undertaken along the Skyline Drive in Shenandoah, where the chestnut blight of the 1920s had left numerous dead stumps and fallen timber. Cleanup also occurred along the Wawona Road in Yosemite and in parks where the white pine blister rust had already taken its toll of native pines.

Emergency Conservation Work developed many truck trails, the service roads that provided administrative access to various parts of the park often passing through land outside the park boundaries. Although these were not traveled by the general public, some park superintendents felt they should receive the same treatment of cleanup and the flattening and rounding of slopes as public roads. Fire trails were six-foot lanes cut through brush and undergrowth generally following ridges, ascending to mountain summits, and penetrating deep forests. These two types of roads together formed the system of fire suppression for a park and as such were an extremely important part of CCC work. Their construction, however, often left scars upon the natural landscape that could be seen from popular viewpoints. Consequently, the roads were situated with concern for landscape protection and screening. They were constructed in ways that would minimize scars and help them blend into the natural scenery. One of Sequoia's resident landscape architects observed that when trails followed wavy lines rather than straight clean-cut ones, they were less conspicuous and blended more readily into the natural setting when viewed from a distance.¹⁸⁷

Emergency Conservation Work made possible improvements in many national park villages. At Yosemite Village, these community improvements took the form of an extensive program of beautification. CCC enrollees removed deteriorated buildings in the old village and through grading, soil improvement, and plantings, returned the area to a naturalized condition. They installed log curbing and new paths, repaired existing trees, and planted trees, shrubs, ferns, and other plants. The boulders that had been placed along the roads and parking areas in the 1920s were removed and replaced with ditches or curbs made of logs laid horizontally end-to-end and partially embedded in the earth. Planting occurred around the plaza, administration building, new hospital, residences, and museum. Ferns, trees, and shrubs were planted along foundations, at entrances and corners, and grapevines were planted in Craftsman fashion to climb up the boulder walls of buildings and give them a more naturalistic appearance. The museum garden, set aside in the late 1920s as an interpretive exhibit of park flora, was expanded and improved.¹⁸⁸

In Yosemite the work of the CCC included rehabilitating springs and making them safe sources of drinking water. Landscape architects saw this work as an opportunity to develop beautiful rock gardens, following the precedent established in 1925 at Apollinaris Spring at Yellowstone. In the mid-1930s, the Cascades Camp transformed several of Yosemite's springs from unsightly and muddy spots into appealing places of tranquil beauty. At Iron Spring, the upper spring was boxed and covered with soil, and water was piped to the lower spring, which had been dug out and lined with rocks. Eight log steps were built from the road down to the spring. Sod, moss-covered rocks, and various

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

plants and trees were planted around the spring. Plantings included eighty ferns, seventy grass clumps, six raspberry bushes (*Rhucus leucodermis*), thirty heathers (*Phyllodoce breweri*), six mimulus (*Mimulus spp.*), twelve alumroot (*Heuchera spp.*), one wild spirea (*Spirea spp.*), six calycanthus (*Calycanthus occidentalis*), twelve mountain ash (*Fraxinus dipetala*), seven red firs (*Abies magnifica*), one azalea (*Rhododendron occidentale*), and one cedar (*Libocedrus decurrens*).¹⁸⁹

Such projects served a combination of important purposes. First, they sanitized popular watering spots. Second, they protected spring areas from compaction of soil and erosion that resulted from trampling and a constant flow of water. Finally, they offered park designers an opportunity to create rock and water gardens with native plants and local rocks in the tradition of William Robinson's wild gardens and the naturalistic waterfalls and fern gardens of American practitioners such as Henry Hubbard, Samuel Parsons, and Ferruccio Vitale.

In 1932, one year before the founding of the CCC and the organization of ECW, the U.S. Forest Service introduced the Meinecke plan for campground development. The Meinecke plan called for extensive rehabilitation of existing campgrounds, the closing of many old campgrounds, and the construction of new ones according to Meinecke's principles of camp planning. ECW was immediately seen as a means to carry out this reform, and the work of the CCC became closely associated with campground construction.

The CCC's campground work included the construction of loop roads with tiers and parking spurs. It entailed clearing, grubbing, and thinning underbrush for roads and campsites. Flammable vegetation was cleared from each campsite, while tall trees and screens of shrubbery between campsites were marked for preservation. Barriers in the form of boulders or logs embedded in the earth were installed to mark roadways and parking spurs and to protect vegetation. Comfort stations, amphitheaters, water fountains, campstoves, signs, and picnic tables were constructed, and a system of footpaths was laid out. Enrollees commonly planted trees and shrubs in existing campgrounds.

Advances were made in the design of items such as campstoves, which needed to be safe enough for public use and to eliminate the threat of forest fires. Amphitheaters and campfire circles became basic features of campgrounds. And in parks where climate necessitated more sheltered gathering places, community buildings were built adjacent to campgrounds.

In response to the increasing popularity of trailer camping in the 1930s, the National Park Service created numerous schemes for trailer and car camping that were developed in national parks and published in *Park and Recreation Structures* in 1938. These schemes were intended to suit most locations and conditions, and allowed for parking along one-way loop roads in parking spurs, drive-through lanes, and several other configurations that could accommodate the automobile with and without trailers. Campgrounds were to be developed in tiers off the main loop road. Additional one-way roads with camping sites could be developed as more facilities were needed.

The 1918 and 1932 statements of policy encouraged certain kinds of

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

recreation in the national parks, particularly winter sports, which would encourage people to come to the parks at times when there were no crowds. This policy created opportunities for the construction of facilities such as ski slopes, toboggan slides, and golf courses. The Badger Pass area in Yosemite, the Lodgepole area in Sequoia, and Paradise at Mount Rainier were all envisioned as centers of winter recreation. At the Lodgepole and Badger Pass areas, CCC camps constructed recreational ski trails and other landscape features related to winter recreation. In conjunction with the development of Skyline Drive in Shenandoah, waysides were to be created at Dickey Ridge, Elkwallow, South River, Big Meadows, and Lewis Mountain. These areas would offer a variety of facilities, such as gas stations and stores run by concessionaires and picnic areas, water, comfort facilities, and trail connections installed by the CCC. In the larger areas, a lodge, cabins, and a campground were provided. Government and concessionary facilities were generally separated, sometimes located on different loops that extended off the main road or parkway. A one-way loop road drew travelers off the main road at gracefully placed wyes and led them around the grounds where sites for picnicking were located on either side of the road. Parking occurred off the road in areas widened for this purpose. The picnic loops allowed designers to adapt the naturalistic principles and practices of landscape gardening to a contemporary recreational use. Often, locations with natural hills and rolling topography or scenic views were selected. Curving paths and stone steps and stairways built into natural rock outcroppings led picnickers to hillside sites furnished with rustic tables and stone fireplaces. Comfort stations were centrally located, and water fountains, fashioned from boulders, hollowed logs, or stonemasonry structures, were placed at cross paths and other locations. Shelters offered cover and massive stone fireplaces. Paths led from the picnic grounds to scenic viewpoints or hiking trails.¹⁹⁰

Recreational development by the CCC also took place at the base of the Grand Canyon, near Phantom Ranch where Bright Angel Creek flowed into the Colorado River. To protect the area from erosion, the banks of Bright Angel Creek were stabilized with riprapping made from boulders excavated from the campground and from what was to be a new swimming pool. The campground was leveled, boulders removed, and cottonwoods planted for shade. In winter 1933-34, the CCC constructed a swimming pool for both campground and ranch visitors. The design of the pool exhibited the naturalistic intent and creative spirit that guided the resident landscape architects at the beginning of the CCC period. An area beside the recreational building was cleared of soil and boulders to make way for the pool. Although constructed of concrete, the pool took the form of a naturalistic pond inspired by Japanese landscape design. It was curvilinear in design and lined with stream boulders taken from the site. Water entered the pool through a pipe fashioned like a naturally flowing stream, trickling in over the boulders. Around the pool, Bermuda grass sod and about four hundred shrubs and trees were planted, and a fence of stone pylons and log rails was constructed.¹⁹¹

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Development of Scenic Parkways

A major advancement in the landscape program of the National Park Service during the 1930s was the development of scenic parkways. This work was planned and carried out by the landscape architects of the Eastern Division of the Branch of Plans and Design, which had evolved from the Yorktown field office staffed in 1930 and headed by Charles Peterson. It was established primarily to plan and design the Colonial Parkway between Yorktown and Jamestown, Virginia, in the 1930s. This office was responsible for the development of parks in the East in the 1930s, which included Acadia, Shenandoah, Great Smoky Mountains, and many of the historic sites, battlefields, and encampments that came into the national park system in 1933 and thereafter. It was also in charge of the park service's first historic preservation projects at George Washington's birthplace and the Revolutionary War sites at Morristown, New Jersey. The partially completed George Washington Memorial Parkway outside the nation's capital was also added to the park system in 1933. The five-hundred-mile Blue Ridge Parkway was an essential link in the plan for a park-to-park highway connecting Shenandoah and Great Smoky Mountains national parks. It brought together the aesthetic and engineering influences of the Westchester County parkways and the National Park Service's Western Field Office. Furthermore, it reflected new ideas about regional planning and recreational development and forged an ethic of scenic preservation based on cultural history as well as natural features.

Parkway development required the acquisition of a continuous narrow margin of land upon which to build a road, the protection of scenic views through the acquisition of easements, the design of overlooks, and the development of waysides and visitor facilities in larger areas spaced at regular intervals along the route. The design of these roads opened up new opportunities for landscape gardening, the clearing of vistas, the cleanup of roadsides, the planting of native vegetation, and the development of recreational facilities. In 1939, Henry Hubbard defined a national parkway as an elongated park that was a highway developed solely for passenger cars and recreational purposes, having restricted access, and bordered by adequate buffers where commercial and other kinds of development are restricted. Parkway preserved scenes of beauty and interest along a selected route and avoided unsightly developments, such as distracting advertising, dilapidated structures, monotonous stretches of farmland, and other discordant elements. Parkway were envisioned as motorways through landscapes having natural attributes, such as forests, lakes, and streams, that were to be preserved or restored to their pristine state. The parkway was furthermore a linear refuge or sanctuary for the protection of wildlife and flora.¹⁹²

The National Park Service established standard requirements for the design of parkways in the 1930s to assure safety and ease essential for recreational motoring. Dangerous grade crossings of main highways and railroads were avoided and points of entry and exit were selected, at spaced intervals, to eliminate unnecessary interruptions in the flow of the parkway traffic.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Likewise, the standards incorporated well-planned alignment, gradient, and landscape treatment to take advantage of scenic features and add to the pleasure of motoring. Waysides, and developed areas were incorporated to provide facilities and recreation at regular intervals. Foot trails, bridle trails, campgrounds, and picnic areas could be developed in some areas, and boating, swimming, and various outdoor sports in others.

The construction and extension of parkways had national interest and importance, particularly within the context of national recreational planning. Funding from the Public Works Administration and other relief measures made possible the acquisition of land for parkways and adjoining recreational areas and the construction of the roads themselves. It was the CCC that built adjoining trails and overlooks, developed campgrounds and picnic areas along the parkways, cleared vistas, and carried out the plantings that naturalized the area after construction, provided improvements such as signs and water fountains, and even turned deteriorating log cabins and homesteads into interpretive displays. By the close of the New Deal, park designers envisioned an extensive system of national parkways to connect important state and national recreational areas.

New Deal for State Parks, 1933-1942

In the 1930s, the National Park Service's programs for master planning, rustic design, and landscape naturalization extended to the development and improvement of state, county, and metropolitan parks. Emergency Conservation Work by the CCC provided the National Park Service with its first opportunity to give direct assistance to states in developing scenic and recreational areas. This assistance took the form of the supervision of conservation activities carried out by each CCC camp and the dissemination of information about park planning, the construction of park structures, and the design of recreational facilities. Supervision occurred through state park inspectors, who were employed by the National Park Service and who worked directly for the ECW district officer. These inspectors traveled to the parks to oversee and make recommendations on the master plans and the design and construction of park roads, trails, buildings, and other facilities. Technical specialists employed by the park service, including landscape architects, architects, and engineers, were assigned to each CCC camp and closely supervised the work of the CCC foremen and enrollees. The specialists developed plans and drawings under the direction of the state park inspectors. Each camp was headed by a superintendent and had several foremen who directly supervised the CCC enrollees carrying out the National Park Service plans.

As public recreation took on major importance in the 1930s, the National Park Service assumed leadership in developing state parks, surveying the recreational resources nationwide, and encouraging state recreational plans. In states having no state parks, such as Virginia and Tennessee, state parks and park systems were developed with the aid of the park service and other federal programs, including the Tennessee Valley Authority, U.S. Department of

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Agriculture, and the Resettlement Administration. With the increasing emphasis on national recreational planning, National Park Service designers found themselves designing facilities for swimming, golf, fishing, skiing, boating, and other outdoor activities.

The relationship with state parks was not new. In 1921, National Park Service Director Stephen Mather had convened the first meeting of what became the National Conference on State Parks, and park service officials had been involved in meetings with state park officials throughout the 1920s. Mather and Harold Ickes, who became the secretary of the interior in 1933, were both among the founding members of the Friends of Our Native Landscape, founded by Jens Jensen in the Midwest in 1913. In his annual reports, Mather traced the development and progress of the state parks movement. By 1933, there was a strong union among the oldest and more established state park systems, including California, Indiana, Iowa, Minnesota, New York, and Pennsylvania.

Emergency Conservation Work in State Parks

Emergency Conservation Work brought major changes to the administrative organization of the National Park Service. Conrad L. Wirth was selected to head the National Park Service's new State Parks Division in Washington, D.C. Herbert Evison, who had been the executive secretary for the National Conference for State Parks, became the supervisor for state park Emergency Conservation Work. Under the first organization of state park ECW, the nation was divided into four districts, each headed by a district officer. J. M. Hoffman--the former director of Pennsylvania's state parks--and later Melvin B. Borgeson headed District I, which covered the East Coast and the adjacent states of Alabama, Mississippi, Pennsylvania, Vermont, and West Virginia. Paul V. Brown, who had worked closely with Colonel Richard Lieber in the Indiana state parks and directed the Bureau of Parks for Allegheny County, Pennsylvania, headed District II, which covered Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio, Tennessee, and Wisconsin. Architect Herbert Maier was put in charge of District III, which covered Arkansas, Colorado, Kansas, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming. Lawrence C. Merriam, a forester and administrator, headed District IV, which covered the western states of Arizona, California, Idaho, Nevada, Oregon, and Washington. In 1934, District I was divided into two districts, with H. Earl Weatherwax heading the new district for the southern states. By 1935, the organization had evolved into eight areas called regions, headquartered in Springfield, Massachusetts; Bronxville, New York; Richmond, Virginia; Atlanta, Georgia; Indianapolis, Indiana; Omaha, Nebraska; Oklahoma City, Oklahoma; and San Francisco.

So dominant a role did state park work play in National Park Service activities in the 1930s that in 1936, the emergency conservation program in the national parks was transferred from the Branch of Forestry to the Branch of Planning and State Cooperation under Conrad Wirth and administered through the state park ECW districts and the eight ECW regions were consolidated into four.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

In August 1937, the National Park Service reorganized and decentralized its operations into four regions based on the ECW regions. In addition to staff assigned to CCC camps and a small regional or district staff, the CCC program relied upon inspectors who traveled from park to park and transmitted design ideas from the central office and communicated the essence of park work and provided critiques and constructive ideas for improving and perfecting the work in the state parks.

State park ECW was organizationally independent of the emergency work in the national parks, but groups working in the two areas communicated and collaborated closely. Both groups shared a philosophical foundation advocating landscape preservation and development that harmonized with nature. State park work was guided by the principles and practices that had been adopted and refined by National Park Service designers from 1918 to 1933, many of which evolved from the mid-nineteenth-century English gardening tradition and Downing's ideas about naturalistic gardening, pleasure grounds, wilderness, and rustic architecture. The program furthermore relied upon the talents of architects and landscape architects already working for state or county park departments.

Before CCC projects for the state parks were approved, the preparation of advance plans was required. Master plans for state parks took varied forms depending on the process already in place in the states and the involvement of National Park Service designers in the actual planning and design. In Virginia, where National Park Service landscape architects were closely involved in the design of parks, the plans were developed on many sheets in a format similar to that of the national parks. In other states, such as Michigan, a single map identifying the name, location, and type of project in relationship to the park's boundaries, roadways, and trails, was sufficient. Plans were prepared before any major construction projects commenced, and they were updated periodically. Once national park designers and officials had roughly agreed on a plan, work was broken down into six-month work projects that the CCC could complete over one or several enrollment periods.

In 1937, with the authority granted by the Park, Parkway, and Recreational Area Study Act, the National Park Service established a formal review process for state park plans. Plans were developed by the state park authorities with the assistance of the inspectors and National Park Service specialists. The master plan was the essential link between the conservation work of the CCC in a state or metropolitan park and the statewide plan for recreation. It simultaneously gave firm direction to the immediate work of park development and fulfilled the broader goal of coordinating recreational areas regionally, statewide, and nationally. The objective of park planning for state parks was similar to that of national parks. The National Park Service designers preparing and reviewing these plans were responsible for ensuring that the entire park area was used to its fullest extent without impairment of natural features and that natural phenomena and historical sites were protected. The overall goal was that park areas be kept in as natural a state as possible.

Like the national park plans, state park plans were to outline the existing

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

and ultimate development of the area. They consisted of general development plans laid out graphically on large topographic sheets and a development outline in narrative form explaining the program of proposed work. Layout plans were then drawn up for each area of the park. These plans indicated roads, trails, buildings, and other features and were the basis for determining individual items of construction work to be carried out by the CCC during each enrollment period.

Although CCC work in state parks followed the general approach to landscape preservation and harmonization set by the national park designers, less stringent standards were applied to the recreational development of state parks. More freedom existed for creative landscape gardening. Since many state parks were being created out of submarginal land, natural features needed enhancement or creation. Although certain practices that had occurred in the urban parks of the nineteenth century, such as moving earth to form beaches or dams and creating forests, lakes, waterfalls, and streams, conflicted with the mission of national parks, they were commonplace in the development of state parks.

In many parks, the construction of recreational dams was considered the foremost work. In others, the cleanup of dead wood, including blighted chestnut timber in much of the Northeast was most important. Selective forestry, tree and plant disease control, removal of fire hazards, and other such work predominated in forested parks. In areas not previously mapped, topographic maps were prepared before plans for "orderly development" were drawn up. The construction and improvement of roads and trails were the first building projects begun in many parks. This work sometimes entailed improving sections of old roads, building new roads, and eliminating traces of roads no longer needed. Other common activities included the development of picnic areas and campgrounds, stream improvement, the construction of picnic shelters and comfort stations, and the development of a water supply. In all of these projects, National Park Service principles and practices were conveyed by landscape inspectors, who traveled from park to park in their assigned region, and the camp foremen and technicians, including architects, landscape architects, and engineers, who had day-to-day supervision of conservation work. For the enrolled men, the experience provided training in the manual arts and an opportunity to gain an appreciation of nature and the outdoors.

Emergency Conservation Work attracted large numbers of educated and experienced landscape architects to fill positions of inspectors, camp technicians, and landscape foremen. The itinerant district inspector was the essential link between the National Park Service and the state park authorities and CCC camps. Working directly for the district officer, inspectors reviewed applications for CCC camps and visited sites proposed for new parks. Once camps were established, they inspected the work carried out by the enrollees under the direction of the camp foremen and superintendent, giving foremen directions and reporting progress and problems to the district officer. The inspectors ensured the high workmanship and consistent adherence to principles of naturalistic and rustic design. They offered critiques of the naturalistic

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

treatments of lake projects, trail construction, and plantings. In spring 1934, the park service began to assign camp technicians who produced plans and drawings and provided routine supervision of ongoing work. Camp technicians included engineers who directed trail and road construction, architects who designed buildings, and landscape architects who attended to landscape issues such as locating sites for construction, protecting natural features, presenting views, designing structures that were inconspicuous and harmonized with nature, and naturalizing disturbed areas after construction. It was these three groups that were key in the overall park development and had the skills needed to ensure naturalism and quality of workmanship. In addition, LEMs or locally employed men provided a valuable understanding of the local climate and weather conditions, the forestry and woodsmanship of the surrounding woodlands, the use of local building materials for construction, and the planting and transplanting of native vegetation.

By 1933, some states had organized park systems and established positions for park designers, while others had few developed parks and no statewide system. It was necessary, therefore, that the state park ECW program adapt to the existing state park structure and coordinate activities with state park authorities. Wherever possible, the park service had designs drawn up by designers or private practitioners working for the state or local park organization. In this way, the ECW program gained the service of experienced park designers such as Arthur Shurtcliff, who was designing buildings and developing plans for Blue Hills Reservation near Boston, and the firm of Hare and Hare, which worked on the Fort Worth Park in Texas. The diffusion of ideas coming from experienced state park designers enriched the overall program and ensured the vitality and individuality of state park design.

The principles of naturalism that had been applied to the design of park roads, stonemasonry road structures, trails, buildings, and campgrounds were applied to the design of roads, trails, structures and facilities in state parks. The use of native building and planting materials, adaptation of pioneering and indigenous building forms and methods of construction, the selection of building sites that were screened, and the siting of structures in harmony with the natural surroundings became the critical factors in the design of facilities. Activities such as rounding and flattening the slopes of roads, roadside clean-up, the construction of overlooks, the clearing of vistas and the "meineckizing" of campgrounds were carried over into state and metropolitan park work.

Davis Mountains State Park was one of the early parks to show the direct influence of national park experience. Creative, spacious, and well-hidden picnic grounds were developed, in which each unit was a rustic grotto or alcove reached through natural rock outcrops, offering views, natural shade, and the amenities of campstove, table, and benches. Even the comfort station was camouflaged by design, stone material, and vegetation. The "premier" picnic site, with an eighteen-foot banquet-sized table was an outdoor alcove reached by stone steps inserted into the narrow space between two rock outcrops and descending to an earthen terrace made flat by large flagstones laid against the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

natural rock outcrop. Natural rock walls and thickets of vegetation enclosed the site on three sides, revealing a spacious view north and east of the valley and hills beyond. Carefully screened from view by vegetation were the road below, a "gateway" cut through the mountaintop, and the naturalistic stone comfort station one hundred yards away on the adjacent hillside. Also at Davis Mountains, a lodge in the pueblo style was constructed using adobe blocks made on site by traditional methods.

Submarginal Lands and Recreational Demonstration Areas

While a number of federal programs provided funds and labor for the development of state and county parks, few provided funds for the acquisition of land to create the parks. State parks were developed in areas already owned by the state or in the process of being acquired by the state. Roosevelt, who had become interested in land-use issues, saw submarginal lands that had limited agricultural value as having great potential as future public parks and recreational facilities. In 1934, as a preliminary step toward affecting land use, the Federal Surplus Relief Administration provided \$25 million for the purchase of low-productivity or poorly used lands, called submarginal lands; \$5 million of the total allocation was for the acquisition of lands to be converted to recreational use. Later that year, the funds were transferred to the Federal Emergency Relief Administration (FERA), directed by Harry Hopkins. Conrad Wirth, designated as coordinator for the Interior Department's participation, immediately developed a program for acquiring submarginal land suitable for park development and recreational activities. The Civilian Conservation Corps and other forms of relief labor could be used to restore these areas to a natural condition and develop recreational facilities for hiking, boating, swimming, skating, skiing, picnicking, and camping.¹⁹³

On May 1, 1935, the land program was transferred to the Land Utilization Division of the newly designated Resettlement Administration headed by Rex Tugwell. On November 14, 1936, however, responsibility for the recreational development area program was returned to the National Park Service. By the end of 1936, the park service had drawn up general development plans for many of projects and was developing the areas with labor and funds provided by the Emergency Conservation Work program, the Works Progress Administration, and the Resettlement Administration.¹⁹⁴

Beyond the primary goal of reclaiming submarginal lands, the program had two additional purposes. It was both an effort to meet the need for increased recreational facilities, particularly among lower-income groups, and a demonstration of how recreational facilities could be planned and developed. Each project was considered an experiment, and the resulting park, wayside, or park extension was viewed as a model for recreational development having important social and humanitarian value for the nation as a whole. The experience of the National Park Service in comprehensive planning, in building park roads and trails, in constructing rustic buildings and structures, and in naturalizing and reforesting the landscape was put to use for the first time,

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

on a massive scale, in developing parks from submarginal lands for primarily recreational purposes. From the beginning, the intention was to turn most of the areas over to state park or highway departments after development and to encourage state and local governments to develop similar kinds of park areas.

The program identified four kinds of recreational demonstration areas: (1) vacation areas 1,500 to 2,000 acres in size located near major population centers and providing a variety of facilities for daytime recreation and overnight camping; (2) waysides 20 to 50 acres in size along principal highways where motorists could rest, picnic, play sports, and enjoy the outdoors; (3) extensions to national parks and monuments developed for recreational activities such as camping, picnicking, and swimming; and (4) areas adjoining state scenic areas that could be redeveloped for recreational uses.¹⁹⁵

In the first year of the program, more than 400 areas of land were investigated and twenty-five projects approved. By 1936, forty-six projects had begun in twenty-four states. By 1941, the forty-six recreational demonstration projects covered approximately 400,000 acres and consisted of sixty-two separate areas. Most popular were the thirty-one vacation areas, which included children's camps, family camps, and industrial and social organization camps--all of which offered opportunities for low-income groups, public and semipublic organizations, and others to enjoy low cost vacations in the out-of-doors. These areas also provided facilities for picnicking and daytime use. In addition, thirteen waysides were developed along highways in Virginia and South Carolina. Approximately 77,294 acres in eleven separate areas were added to national park areas, including the Manassas National Battlefield, Kings Mountain National Military Park, Badlands National Monument, and White Sands National Monument. Approximately 41,841 acres were added to five existing state parks: Alex H. Stephens State Park and Pine Mountain State Park in Georgia, Custer State Park in South Dakota, Fall Creek Falls State Park in Tennessee, and Lake Guernsey State Park in Wyoming. The program made possible the development of recreational areas along the Blue Ridge Parkway and the acquisition of land authorized but not yet acquired in Acadia National Park and Shenandoah National Park. The newly acquired land in these parks was developed for recreational purposes: waysides for picnicking and camping were built along Skyline Drive and the Blue Ridge Parkway, and campgrounds, scenic viewpoints, picnic areas, bathing beaches, and boating facilities were developed at Acadia.¹⁹⁶

Vacation areas were designed to supplement existing state parks, which most commonly had been set aside and developed for their scenic features. They were modeled closely on state parks, with particular emphasis on the development of organization camps, particularly the Harriman section of the Palisades Interstate Park, which had begun a program of organization camps in the 1910s. The requirements for vacation areas stipulated that they were to be from 2,000 to 10,000 acres in size and located within approximately fifty miles of a major center of population. In Pennsylvania, which had five such areas--the most of any state--these areas were accessible to seven urban centers: Reading, Philadelphia, Scranton, Wilkes-Barre, Altoona, Johnstown, and Pittsburgh. The

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

acreage was to be adequate to provide separate sections for day and overnight uses and to accommodate several organization or group camps that would be separated from each other and from the public camping and day-use areas. Because swimming was the most popular sport, it was desirable for each demonstration area to have a natural or artificial body of water. Camps were often located out of sight among the trees bordering the shoreline. The park service promoted as a model the 15,000-acre Chopawamsic RDA outside Washington, D.C., in Virginia's Prince William County, one of the first areas opened for public use. In 1936, the service published *Recreational Demonstration Areas, as Illustrated by Chopawamsic, Virginia* as a basis for the development of other RDAs, state parks, and metropolitan parks, partially fulfilling the objective that the RDAs be demonstrations of public recreational areas.¹⁹⁷

Organization camps were one of the most significant features of these areas. The U.S. government constructed facilities for several separate camps in each recreation area for use and management by private and semiprivate social, educational, and welfare organizations, such as the Campfire Girls or a local board of education. Such camps provided an experience in nature and the outdoors for youth and families from nearby cities and rural areas. Each camp was divided into an administrative center and small outlying units, each housing twenty-four campers. Central dining and recreation halls, an infirmary, a director's quarters, and other administrative buildings were located in the administrative center. Radiating out from the center were the various camping units, located so that each was out of sight and hearing of other areas of the camp. Each unit consisted of sleeping cabins for campers and leaders, a washhouse and latrine, and a lodge with an outdoor attached kitchen. The arrangement of the camp made it possible for each unit of cabins to operate independently of the larger camp. The design of the lodges, with fireplaces and ample space, made it possible to house groups for winter activities.¹⁹⁸

The educational and recreational value of such camps had long been recognized, but until 1934, only a few state parks provided such facilities. One highly acclaimed program was in the Harriman section of the Palisades Interstate Park in New York, which had begun in the 1910s and by the 1930s had more than ninety camps providing low-cost vacations annually to more than six hundred children. On the West Coast, several cities had developed similar camps for children and families in nearby public forests.¹⁹⁹

The success of the RDA program was measured immediately in the accessibility of the areas to population centers and the popularity of the areas themselves. In 1936, it was projected that the forty-six demonstration areas would serve an estimated 30 million people. In 1937 alone, the completed areas received one hundred thousand days of use by overnight campers and 1 million days of use by daytime visitors. The project employed significant numbers of men through the CCC and Emergency Relief Administration (ERA). By 1938, eight thousand relief workers and twenty-three hundred CCC enrollees had been put to work developing a total of 352,874 acres of land for recreational purposes.²⁰⁰

Acquisition called for the purchase of land possessing some degree of scenic

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

character and topographic qualities that made it possible to develop a body of water, a system of roads and trails, and several separate areas for daytime use, overnight camping, and organization camps. The National Park Service directed all planning and development of the new parks, while the Resettlement Administration moved the displaced residents to areas outside the parks. The social and administrative aspects of organized camping had been the subject of state park meetings in the 1920s, and a substantial amount of information on them therefore existed. The National Park Service drew from the experience and knowledge of the nation's leaders in the fields of camping and organized camping, such as Fay Welch, who headed the camping program at the Palisades Interstate Park.

Developing an RDA posed planning and design problems that called for use of the principles and practices formulated by the landscape architects of the National Park Service. Since these areas were not primarily scenic in nature, they provided the opportunity to use techniques for landscape naturalization, from cleanup to replanting. The task of redeveloping the land for its scenic and recreational potential was not unlike that encountered by the state of Virginia and the National Park Service in developing Shenandoah National Park from former fields and pastures. This work had called for the removal of structures and buildings, the planting of road traces, the clearing of dead and down timber and old stone walls, and the recovery of natural vegetation. RDAs, however, called for the blending of recreational development with naturalistic gardening on a scale not encountered by park designers previously. Wildlife and forest protection studies and measurements were made, and each area was carefully planned before development. Emphasis was placed on the development of all-year recreational facilities, especially the creation of lakes and ponds for swimming, fishing, boating, and skating.

The development of RDAs challenged park service designers to expand their repertoire of park facilities to accommodate a full range of recreational activities from boating to winter sports and new kinds of structures called for by the organization camps. Although the actual number of areas developed by the National Park Service was limited, the resulting design ideas had widespread applications for state and metropolitan parks in general.

RDAs had a lasting impact on public recreation and the design of state and metropolitan parks. Organization camps and artificial bodies of water were developed for recreational purposes throughout the nation's state parks and forests during the CCC era. Moreover, other federal agencies called upon the National Park Service to develop recreational areas. These agencies included the Tennessee Valley Authority, which had incorporated several large parks in its plans for the region, and the Bureau of Reclamation, which controlled Lake Mead, the largest artificial lake in existence at the time and the result of the construction of Boulder Dam on the Colorado River. Recreation took on broad meaning, and a definite shift in emphasis occurred from the conservation-minded goals of those who had advocated scenic areas as state parks in the 1910s to the creation of multipurpose recreational parks in a natural setting. The experience of the National Park Service--in master planning, landscape

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

preservation and naturalization, and rustic architectural design--was coupled with a philosophy that called for creativity and diversity of expression based on harmonization with natural conditions and adherence to common principles and practices.

The New Deal programs allowed the National Park Service to take a leading role in the development of state and local parks and to help fulfill the broad vision for the use of natural resources for public outdoor recreation that had been emerging among state park advocates and public officials since the 1920s. As new and improved state parks opened their gates to increasing numbers of Americans in the 1930s, the idea that outdoor recreation should be affordable and accessible to every American became firmly ingrained in the national conscience. Organization camps, more than any other facility built during the New Deal, embodied the new park ideal. Those built as RDAs and those modeled after the RDAs have continued to fulfill their social, educational, and recreational purposes.²⁰¹

Works Progress Administration

Another source of funding and labor for state and local park development was the Works Progress Administration (WPA). The WPA was established by executive order by President Roosevelt in 1935 and headed by Harry Hopkins until 1939. This program paid wages for skilled labor in a variety of fields, including art, theater, architecture, writing, and engineering. WPA funds helped create reservoirs and lakes for recreation, amphitheaters for public entertainment, lodges in state parks and national forests, murals for public buildings, public highways, and utility systems. Administered through state agencies, the funds were given to local governments and were designed to increase the purchasing power of paid workers on WPA projects and thereby stimulate the economy. In December 1935, the National Park Service began to cooperate with the newly created WPA by assuming responsibility for the technical supervision of the work programs of forty-one WPA work camps operating in state, county, and municipal parks.

The National Park Service's involvement was prompted by the state, county, and municipal agencies sponsoring the camps, who saw the program as an extension of the CCC program to conserve natural resources and develop public recreational areas as well as the emergency relief program for recreation demonstration areas. As a result, state park inspectors and designers employed by the National Park Service reviewed applications, commented on construction designs, and supervised progress in conjunction with their review of CCC work. WPA projects adhered to the same basic principles that guided emergency conservation work and public works construction.

The first year, projects took place in three federal, twenty-two state, and thirteen municipal park areas. WPA projects included large facilities built in state parks, such as refectories, lodges, museums, dams and artificial lakes, and large amphitheaters. This program also made possible the expansion of concessionaires' facilities in both national and state parks; one example was

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

the Big Meadows Lodge and Cabin Development in Shenandoah National Park. In addition, through the WPA the National Park Service took charge of a program to stabilize the North Carolina shoreline through the construction of sand fences and the planting of dunes. The park service continued to review and oversee WPA recreational improvements in state and local parks until the program ended in 1943 as the wartime economy eliminated the need for relief work.

The Park, Parkway, and Recreational Area Study

Support for state park development and the leadership of the National Park Service in surveying and fostering recreational resources nationwide increased in the early 1930s. This support went beyond the development work of the CCC through Emergency Conservation Work and the creation of RDAs and resulted in a cooperative effort between the National Park Service and state governments to formulate a national recreational policy. By executive order of June 30, 1934, President Roosevelt established the National Resources Board "to prepare . . . a program and plan of procedure dealing with the physical, social, governmental, and economic aspects of public policy for the development of land, water, and other national natural resources." The board was to submit a report on land and water use by December 1, 1934. The National Park Service set up a Recreation Division headed by George Wright to study the topic of national and state parks and related recreational activities and prepare the chapter on the recreational use of land in the United States. This preliminary report showed the need for an exhaustive nationwide survey of recreational activities. The proposal for such a study immediately gained the support of the Department of the Interior. In 1935, an advisory committee was appointed to help the park service formulate policies and programs relating to state park work. This committee included the retired head of Indiana's parks Colonel Richard Lieber, former park service director Horace Albright, and several planners, park promoters, and association representatives. By this time, CCC work in state parks was being planned and supervised by experienced architects, landscape architects, engineers, foresters, wildlife specialists, geologists, and archeologists. By mid-1935, approximately 150,000 men and 6,000 technicians had been involved in emergency conservation work in both national and state parks. The park service cooperated with the National Recreation Association at this time to conduct a study that resulted in the publication of *Municipal and County Parks in the United States in 1938*.²⁰²

It was not until passage of the Park, Parkway and Recreational Area Study Act of June 23, 1936, that the National Park Service was authorized and given funding to make a comprehensive study of the public parks, parkways, and recreational-area programs of the nation. The study was to assess the legislative provisions for recreation and conservation at all levels of government and examine the existing resources. The act also authorized the park service and other federal agencies to aid states in planning, establishing, improving, and maintaining parks, parkways, and recreational areas. Other important features of the act were its recognition of the

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

principle of regional planning and the provision that two or more states could enter into agreements with one another to develop recreational areas. The act, although limited in its scope, codified the cooperative relationship that the National Park Service had with state parks informally since 1921 and through Emergency Conservation Work since 1933. For the national parks, it extended the meaning of "recreation" as used in the National Park Service policy statements of 1918 and 1932 to include intellectual and aesthetic pursuits that more closely embraced scenery preservation, study, and interpretation. It also broadened the scope of national parklands to encompass the diverse types of parks managed by the service in the mid-1930s--the large natural parks, monuments, historic sites, battlefields, military parks, and parkways--and made way for new areas such as seashores and lakeshores.

State surveys of recreational areas were conducted as a basis for the national study. Recreation was classified into five broad types: physical, aesthetic, creative, intellectual, and social. Parks were divided four types: primitive, modified, developed, and scientific. The state surveys resulted in reports, many of which were individually published. They functioned as comprehensive plans and as guides to recreational resources that coordinated the activities of parks, forests, wildlife refuges, and reservations at all levels of government into a single recreational system for each state. These studies were later incorporated into regional and national studies. In 1941, the National Park Service published *A Study of the Park and Recreation Problem in the United States*. By this time, thirty-four states had completed detailed studies assessing the condition of their parks and their needs for recreational areas. The momentum for state and national park cooperation continued despite the war, and the first grants-in-aid bill was introduced in 1945. The bill was unsuccessful, and it was not until 1964 with the passage of the Land and Water Bill, that a grants-in-aid program for park development was realized.²⁰³

The concept of the nationwide state park recreational program was set out in a brochure published by the National Park Service in 1937. Entitled *The CCC and Its Contributions to a Nation-Wide State Park Recreational Program*, the brochure emphasized the accomplishments of the CCC in state park work and in RDAs. Not only had ECW made possible the development of existing parks, but it was a catalyst in the acquisition of new lands: thirty-seven states had acquired a total of 350 new park areas covering 599,091 acres, and eight states--Colorado, Mississippi, Montana, New Mexico, Oklahoma, South Carolina, Virginia, and West Virginia--established their first parks as a result of the stimulus provided by the CCC. This promotional brochure upheld the physical, social, moral, and educational value of outdoor recreation and called for state and regional planning to ensure that recreational facilities were within reach of every American. It called for planning at all levels--in the park itself and in the selection and coordination of recreational resources across a state or among a group of states. Wirth and other park service officials saw their work as a social-humanitarian effort. They were laying the foundation of a federal and state partnership in recreation that would significantly contribute to the human wealth of the nation.²⁰⁴

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Portfolios and Publications

Principles and designs for every aspect of park development were circulated in several publications of the National Park Service. Those pertaining to the construction of park structures and facilities included the *Portfolio on Comfort Stations and Privies* and *Portfolio on Park Structures* in 1934, *Park Structures and Facilities* in 1935, and the three-volume *Park and Recreation Structures* in 1938. *Landscape Conservation: Planning for the Restoration, Conservation, and Utilization of Wild Lands for Parks and Forest* of 1935 set forth a philosophy and process for the recreational development of natural areas based on a study of natural topography and vegetation. In 1937, as part of the expanding educational program of the Civilian Conservation Corps, a series of training manuals known as the Project Training Series was published. Although these manuals covered a variety of topics related to camp life and general skills, several manuals addressed the conservation work being done in state and national parks. *Landscape Conservation* was republished as part of the series, and manuals on trail construction, stonemasonry, and signs were developed; these manuals provided technical instructions and numerous examples, drawing heavily from the CCC-work in state and national parks.

Work began on the first portfolios immediately after the formation of the State Parks Division. Wirth hired Dorothy Waugh, an illustrator and the daughter of his mentor Frank Waugh, to gather information on park facilities and develop an illustrated manual with instructions for the construction of basic park structures that could be used by the CCC. The first two portfolios took the form of loose-leaf binders that could be circulated immediately and expanded as new designs became available. The idea was to get designs and technical information out to the CCC camps, where work was proceeding and guidance needed, as quickly as possible. The first portfolio included an assortment of designs for comfort stations and privies and covered technical details of sanitation and construction. The most basic of park structures, comfort stations and privies were distinguished on the basis of whether they employed plumbing or more primitive arrangements in their sanitary design. The comfort stations that Vint's office had designed for Union Point in Yosemite and Logan Pass in Glacier were published, alongside those built by the Westchester County parks in New York and the designs of Albert Good for Virginia Kendall Park in Akron, Ohio. The second loose-leaf portfolio incorporated the designs for privies and comfort stations and added sections on fireplaces, picnic tables, park benches and seats, entranceways, barriers, bridges, lights, bathhouses, administration buildings, picnic shelters, cabins, community buildings, service buildings, museums, and lookouts. As new designs became available, they were distributed to the district offices and state park camps, where they were added to the corresponding section of the binder. The portfolio would eventually become a compendium of park and recreation structures, from substantial buildings to small elements such as log guardrails and stone fireplaces. Dorothy Waugh's selections represented the state of the art of park construction in 1933 and 1934.²⁰⁵

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Waugh drew heavily from the work in state and county park systems to represent the full range of recreational buildings. She collected blueprints and drawings of picnic shelters, bathhouses, boat houses, and other buildings from state and county park systems that were part of the mainstream park movement, including the Westchester County Parks Commission and other regional commissions in New York; municipal parks of Akron, Ohio; state parks of Indiana, Iowa, and Pennsylvania; and Forest Preserve District of Cook County, Illinois. Many of these likely came from the files of the National Conference on State Parks, which Herb Evison had directed before becoming the National Park Service's supervisor for state park Emergency Conservation Work. Waugh also considered designs used by the U.S. Forest Service, particularly for outdoor fireplaces. She drew heavily upon the designs for the park structures that were built by the CCC during the first two or three enrollment periods, particularly relying on districts headed by Herbert Maier and Paul Brown. Her sources included the blueprints for signs, cabins, and a community building that Cecil Doty had prepared in Maier's district office for use in state park Emergency Conservation Work. Among these drawings, which became the first prototypes for park construction, were a basic comfort station with battered walls that could be rendered in stone or log and had been developed for Virginia state parks, a roof-covered picnic table developed by the Pennsylvania Department of Forests and Waters, an adobe cabin group that was designed for Davis Mountains State Park in Texas, a tourist cabin from Minnesota's Itasca State Park, a lodge for Giant City State Park in Illinois, a museum and administration building for South Mountain Park in Phoenix, an observation tower from an Alabama state park, and a bridge from Enfield State Park in New York that closely resembled Franklin Park's Scarborough Bridges and the White River Bridge at Mount Rainier. This group included a number of building types, such as bathhouses, that had no counterpart in national park work. Waugh included bathhouses from Indian Lake in Michigan and open picnic shelters such as one for Allegheny County parks in Pennsylvania.²⁰⁶

In 1934, work on the portfolio was abandoned in favor of a volume consolidating photographs, drawings, and plans of successful CCC, PWA, and WPA projects, as well as national and state park work. The new volume entitled *Park Structures and Facilities*, was intended as an honor roll of outstanding examples of park structures, many of which had been constructed through Emergency Conservation Work. It was edited by Albert Good, the designer of buildings for Virginia Kendall Park, a new Akron park being developed through ECW, and compiled by an editorial board consisting of Chief Landscape Architect Thomas Vint; ECW District Officer Paul V. Brown; ECW District Officer Herbert Maier, National Park Service spokesperson and expert on the design of park structures; Oliver G. Taylor, the deputy chief engineer of the Eastern Division of the Branch of Engineering; Norman T. Newton, the landscape architect for ECW Region Two; and Dorothy Waugh. Although Good wrote the apologia and comments throughout the book, the ideas set forth represented the thinking of the committee as a whole. These ideas were principles and practices that Vint and Maier particularly had formulated in the late 1920s and early 1930s. Herb

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Evison, the supervisor of the State Park Division and the former executive secretary of the National Conference of State Parks, also offered advice based on his broad experience in state park work.²⁰⁷

The volume stands as a comprehensive index of national park principles and practices for naturalistic landscape design and rustic architecture. Although the book focused on construction methods and materials of park structures, it provided some general guidelines on locating and planting facilities to harmonize with the natural landscape. The park service published 2,350 copies of *Park Structures and Facilities* in 1935. The popularity of the work led to the much larger distribution of an expanded three-volume set in 1938, entitled *Park and Recreation Structures*.

Both editions included drawings of floor plans and elevations carefully delineated in the same neat hand, presumably that of Good himself. Photographs were drawn from many sources; most of those depicting national park work were taken by George Grant, who had begun working as a park service photographer out of the Western Field Office in the late 1920s and had created a visual record of newly completed work of the Education, Engineering, and Landscape Divisions. The majority of photographs, however, came from the illustrated narrative reports submitted by camp superintendents, landscape inspectors, and resident landscape architects.

Although the books primarily depicted state park construction, they did include some of the earlier rustic structures built in the national parks. A number of park buildings designed by Vint's office and Herbert Maier were shown, perhaps drawn from previous portfolios and their own "libraries" of successful designs. Examples are the administration buildings at Longmire and Yakima Park and the community buildings at Paradise and Longmire in Mount Rainier; park housing at Yosemite; museums at Fishing Bridge, Madison, and Norris Geyser Basin in Yellowstone; the Yavapai Point Observation Building at Grand Canyon; and the entrance station at Tioga Pass in Yosemite. Views of the Trail Ridge Road in Rocky Mountain illustrated the stonemasonry techniques of the Landscape Division.

Diverse examples of state park structures dominated the books and Good praised the ingenuity of their designers, who remained nameless throughout the books. Iowa was noted for its shelters and entrance stations, Texas for its entrance pylons of native stone, and Virginia for its cabins. Sometimes the work in a particular park was highlighted--for example, the cabins in Bastrop State Park in Texas, where Arthur Fehr, the park architect, developed a prototypical set of cabins. These became standard drawings that were circulated in the form of blueprints and copied in other Southwest parks, such as Lake Murray in Oklahoma.

The illustrations were intended to show not prototypes to be copied but examples to foster imaginative harmonious solutions adapted to the needs and character of each situation. The examples illustrated work in natural parks and in some cases historical sites. Natural parks were generally national and state parks. The committee included examples from metropolitan and county parks that members felt "would be equally at home in a completely natural

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

environment." These included examples from the Blue Hills Reservation in Massachusetts, the Virginia Kendall Park near Akron, and the parks of Boulder, Chicago, Denver, and Oklahoma City, as well as the parks in Essex County, New Jersey, and Reading, Pennsylvania.²⁰⁸

In the introduction to *Park Structures and Facilities*, Director Arno Cammerer recognized the efforts of the National Park Service, state park authorities, and other agencies in achieving a "constantly improved technique of design and execution for the structures that are required for safe, convenient, and beneficial public use of these parks." He emphasized the fact that construction of any type was an intrusion into a natural landscape and that the basic objective of designers in such areas was to "hold these intrusions to a minimum" and design them so they appeared "to belong to and be a part of their settings." He credited the work of the architects of the Emergency Conservation Work program, with its emphasis on recreational facilities, for the marked progress in this field. He stated that the purpose of the book was to present some of the successful structures of natural parks, to stimulate "still further improvement in this special field of landscape design."²⁰⁹

The book was not intended as a primer, an encyclopedia, or a handbook, but as a record and honor roll of good practices in designing park structures and facilities. The examples were intended to illustrate principles and stimulate new designs. The examples selected fit into one of three categories: 1) minor facilities that could be duplicated and closely adapted to other localities; 2) designs suited to particular locations and intended to portray "the spirit" of structures in a natural setting and inspire ideas and further examples for harmonizing design and setting; and 3) outstanding solutions to highly individual problems unlikely to occur elsewhere.²¹⁰

In 1938, the service published an expanded 600-page version called *Park and Recreation Structures*, which was issued in three separate volumes. Individual sections on cabins or signs, for example, were also printed separately. Volume 1 covered facilities for basic services and administration such as entranceways, signs, bridges, culverts, and comfort stations. Recreational and cultural facilities, the subject of volume 2, included picnic shelters, fireplaces, tables, boat houses, campfire circles and amphitheaters, refectories, dams and pools, and miscellaneous sports facilities such as toboggan runs and docks. Volume 3 covered overnight and organized camp facilities, including tent and trailer campsites, cabins, lodges, campstoves, washhouses and laundries, and facilities for cooking, dining, social activities, and sleeping in organization camps.²¹¹

The expanded range of structures and facilities reflected the growing programs for state park development and recreational demonstration areas and the increasing involvement of the National Park Service in planning areas where recreational activities rather than scenic and natural features were of primary importance. The inclusion of trailer campsites indicates visitors' increasing interest in carrying their "temporary homes" with them and the demand for longer, drive-through parking spurs, circular loop roads, and tiers with wider

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

turning radii. The 1938 volumes also included a number of examples drawn from historic sites and parks, where new facilities were being coordinated with historic restorations and reconstructions.

The development of RDA's was probably the most important factor influencing the expansion of *Park Structures and Facilities*. Volume 3 of *Park and Recreation Structures* was entitled "Overnight and Organized Camp Facilities" and presented for the first time designs for a full range of camp buildings: dining halls, recreation halls, infirmaries, wash houses, latrines, laundries, and sleeping cabins--all of the components that made up a self-sufficient camping unit. It also provided layouts for organization camps of varying sizes and settings. Common to all the layouts was the division of the camp into small social units and the informal arrangement of buildings across the natural topography. In their designs for organization camps, the National Park Service designers drew heavily not only from examples at the Palisades Interstate Park and the successful cabin camps in state parks but also from the great camps of the Adirondacks, which featured clusters of buildings having specialized functions and arranged in relation to the shoreline, forest, and natural topography.

In RDAs as well as many metropolitan and county parks, there was an increasing emphasis on winter activities and the need for facilities for sledding, skiing, skating, and ski jumping. The park service looked to parks such as the Forest Preserve District outside Chicago and Bear Mountain in the Palisades for models of winter facilities. It looked also to the design of ski areas in the national parks such as Yosemite and Sequoia. These kinds of facilities were included in Volume 2 of *Park and Recreation Structures*, which covered recreational and cultural facilities.

The volumes edited by Albert Good became the principal means by which the National Park Service transmitted the principles for naturalistic construction that had been developed by the Landscape Division under the direction of Charles Punchard, Daniel Hull, and Thomas Vint and by Herbert Maier, architect for the Education Division, who had designed the museums and interpretive shelters and exhibits at Yosemite, Yellowstone, and Grand Canyon in the 1920s. The early ECW work in state parks had provided opportunities to apply these principles to vastly diverse areas in all parts of the nation and to a variety of natural landscape types from the northern woods of Maine or Minnesota to the arid deserts of Arizona.

Foremost designers were to subordinate the construction to the park plan, which determined the size, location, and use of every structure. In addition, park structures were to be subordinated to the natural environment and located to take advantage of any natural screening that existed on the site. Where natural screening did not exist, a site was to be planted with native vegetation like that of the surrounding area. Signs played a particularly important role in natural parks, marking the way to buildings that were concealed behind vegetation.

Promoting the basic concept of architectural unity, Good recommended that in one park, a single style and a limited range of materials and construction

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

methods be used for all structures. This meant harmonizing new buildings with older ones or abandoning discordant old styles in favor of a new, more suitable, and unified scheme.

Good urged designers to keep down the number of buildings in any one area and to combine functions in one structure wherever practical. The book illustrated examples of lodges that combined concessionaire operations such as dining rooms and stores, with administrative uses and community rooms for social gatherings and lectures. Bathhouses, boat houses, and overlook shelters were commonly combined with other functions.

"Rustic" was the term generally used to refer to the style widely used in the forested national parks and in other wilderness parks. Good defined rustic design as a style that "through the use of native materials in proper scale, and through the avoidance of rigid, straight lines, and over-sophistication, gives the feeling of having been executed by pioneer craftsman with limited hand tools. . . . It achieves sympathy with natural surroundings and with the past." Although Good hoped a better term would evolve to describe the style of national and state park structures, the term "rustic" endured.²¹²

Essential was the use of native materials. Good claimed that it was character, not the fact of "nativeness," that gave rocks or logs their value as building materials. He cautioned against cutting stone or forming concrete blocks to a regular size and surface and shaping logs like rigid telephone poles or commercial lumber. Good, echoing the principles of Andrew Jackson Downing, warned his readers against introducing boulders that were moved from a distance into "a location where Nature failed to provide them" and against incorporating heavy alien timbers into a structure in treeless areas. Rockwork was to be proper in scale. The average size of the rocks employed was to be large enough to justify the use of masonry. Rocks, selected for hardness and color, were to be placed on their natural beds, the stratification or bedding planes horizontal, never vertical. Preferred were a variety of size in rocks was preferred, with the larger stones predominating at the base, and an irregular pattern of masonry joints to give rockwork a pleasing informality. Logs were to be carefully selected, peeled to avoid decay, and "pleasingly knotted." Knots were not to be removed by saw but left to add texture and character to the log.²¹³

Good encouraged designers to seek inspiration from pioneering and indigenous expressions of a region or from Native American habits and ingenuity. These led designers to emulate vernacular methods of construction and revive traditional techniques of logwork, stonemasonry, and adobe construction.²¹⁴

The harmonious relationship of component architectural features was essential to good design. Foundations were the key to uniting land and structure and fostering harmony with nature. Echoing the writings of Hubbard and Waugh, the philosophy of the Arts and Crafts movement, and the park buildings designed by Herbert Maier, Good urged readers to construct structures upon rough rock and battered footings to give the impression of natural rock outcroppings and to blend the structure with the site. Foundations could also be planted with ferns and other low-growing plants to further conceal the line

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

of demarcation between the site and structure.²¹⁵

Roofs were to exhibit the quality of weight to be in character with the heavy walls of rock and timber that they crowned. This quality was achieved in several ways: verge members in gables were to be oversized, eave lines were to be thick, and the roofing material was to appear correspondingly heavy and durable. Where wood shingles or shakes were used, they were to be a full inch in thickness if possible, with the doubling of every fifth course or so, unless the building was quite small. This would bring the roof texture into more appropriate scale with the rest of the structure. Irregular, wavering, "freehand" lines were favored over straight rigid eaves and course lines in designing the roof of a park structure.²¹⁶

Good built upon Maier's concept of overscaling, recommending that in high, mountainous, and forested regions the various structural elements of rustic construction were to be reasonably overscaled to surrounding large trees and rough terrain. For pleasing harmony, he suggested that the scale of structural elements be reduced proportionately as the ruggedness and scale of the surroundings diminished.²¹⁷

Structures were to incorporate the colors that occurred in nature and were dominant in the immediate surroundings. In general, warm browns were recommended for "retiring a wooden building in a wooded or partly wooded setting." Another "safe" color was driftwood gray. Where contrast was desired for architectural accents, such as window muntins, a light buff stone color could be used sparingly. Good discouraged the use of green because it was difficult to match the shades found in nature. A green roof, while expected to blend with surrounding trees, did not result in harmony because foliage was an uneven surface, mingling with other colors and broken up into patches of deep shadow and bright openings. A roof, however, was a flat plane that reflected a solid continuous color. Good recommended brown or weathered-gray roofs to blend with the colors of earth and tree trunks.²¹⁸

While the portfolios gave thorough information on designing park structures and facilities, *Landscape Conservation* by Frank Waugh, first published in 1935, covered the larger issue of land reclamation, the development of lakes for recreation, and the creation of trails and campgrounds. This booklet was a compilation of Waugh's principles for recreational development, which he had practiced in national forests, and his theory on the natural style of gardening, which was first published in 1917 and was expanded through a series of articles in the 1920s and early 1930s. His interest in recreational development extended to the construction of outdoor theaters and campfires, a topic on which he had also written extensively in a 1917 book and several subsequent articles. By the 1930s, Waugh had a long-established career in the development of forest lands. Through seasonal contracts with the U.S. Forest Service at Grand Canyon, Mount Hood, Bryce, and Kings Canyon, Waugh had put into practice his early ideas on the "natural style" of landscape gardening. His work on the Mount Hood Road put into practice his ideas about sequence of motives, change of direction, and overlooks at the climax of scenic vistas. Waugh was indebted to Andrew Jackson Downing's principles, and several years

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

before had published a revision of Downing's theory of landscape gardening. Waugh urged the preservation of natural rock formations, sand dunes, and other physiographic features for their scientific interest and surpassing beauty. He set forth ecological principles and a zonal approach to recreating vegetation based on the study of natural conditions. These principles were particularly important for the mass plantings that were to occur in submarginal lands and the creation of artificial lakes for recreational use.

The publication was an effort to provide practical and technical information on how wild lands--national parks and forests, state parks and forests, and other public and private holdings--could be developed for public use and enjoyment. It set forth principles and practices for the CCC to follow in varied aspects of conservation work. Many of these activities corresponded to those the Landscape Division, under the direction of Thomas Vint, had classified as landscape naturalization.

Wild lands were to be developed according to eight principles: human use and enjoyment, order, cleanliness, beauty of scenery, conservation, restoration, economy, and circulation. The principle of human use and enjoyment called for the construction of structures built in good proportions, agreeable in appearance, and lacking in ornamentation; this meant inconspicuous structures constructed of native stone and peeled logs. The principle of order called for the simple and orderly arrangement of groups of buildings or structures into clusters. Cleanliness required that easy maintenance and proper disposal of waste be included in the planning from the beginning. Economy could be achieved through simple, solid construction and provisions for easy and economical maintenance. The principle of beauty of scenery called upon planners to study the landscape by experiencing all kinds of landscape in all kinds of weather, at all times of day, and in all seasons. The principle of conservation upheld the preservation of native flora and fauna as a fundamental but complex requirement, calling for long and serious study. Where fine native species--mountain laurel, trailing arbutus, azaleas, rhododendrons, and others--were depleted or lost, they were to be restored.²¹⁹

An adequate system of circulation, Waugh pointed out, was the first problem in all physical planning and included main roads, side roads, trails, footpaths, bridle trails, and water suitable for canoeing. He cautioned against overdoing circulation systems and suggested that designers should begin the development of any area with meager roads and trails, enlarging old roads if necessary, but improving construction and extending fresh trails in new areas only when positively demanded by use.²²⁰

Waugh outlined the types of sites needed for developing wild lands: administrative sites, service sites, sites for hotels and accommodations, sites for water conservation and supply, sites for sewage disposal, clubhouse sites for special recreational purposes, campsites for permanent group camps, sites for temporary tent camping, playing fields, tennis courts, golf courses, bathing beaches, and fishing areas. He stressed the need to plan for these and select the best location even when they were not to be developed right away.

Roads and trails were the framework of the entire design of a recreational

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

area, providing transit between principal points in the park and "revealing pleasant scenery." The planner's role was to locate the main points of scenic value, such as fine outlooks, stately groups of trees, and objects of local interest, and to lay out trails connecting these. According to Waugh's theory of trail design, trails were to be laid out so that the most spectacular views were seen at turning points against a rising grade. Scenic objects or features were best viewed straight ahead and at a distance, while broad outlooks over valleys, mountains, or water were to be viewed at varying angles to the trail. This was accomplished by giving a "convenient" turn to the trail at the point of view and by widening the trail and providing a stopping place, perhaps with seats, facing the outlook. Waugh introduced his ideas of arranging the scenery along a trail as a series of themes or motives arranged in "paragraphs" that could draw attention to the unique natural features of a variety of landscape types. Trails were to pass through a variety of scenes; for example, a trail along a pond shore should from time to time weave its way into the woods and out of sight of the lake. The grade of a trail was to be varied to avoid tiring the hiker and becoming monotonous.²²¹

Although Waugh's instruction on siting campgrounds was practical and basic, he elaborated on the construction of two types of features to which he had given considerable attention in his career: the bonfire and the outdoor theater. In *The Natural Style in Landscape Gardening* Waugh had written that the bonfire was a social and communal gathering place requiring an ash pit or paved area for the central fire with room about it for people to congregate in concentric circles, perhaps on low seats of sawn or split logs. Waugh gave instructions for transforming the campfire into an outdoor theater designed to harmonize with the surrounding woodlands. The ideal location was a curving river terrace where sloping concave banks provided a natural amphitheater. Simple outdoor auditoriums could also be created on planted slopes or on level ground. Outdoor theaters could be circular with a central bonfire, or, for performances, they could be semicircular with a raised stage at the front, aisles radiating outward and upward, seats forming the arcs of the circle between the aisles, and a blank wall for the back of the stage. Seating could be either on the ground or on sawn planks or halved logs. Waugh's description clearly reflected the solutions that Herbert Maier and the national park designers had developed at the Old Faithful and Fishing Bridge museums in Yellowstone National Park. These solutions also reflected Waugh's *Outdoor Theaters* of 1917 and his later article "Notes on Outdoor Theaters" in *Landscape Architecture*. Waugh's interest in outdoor theaters was inspired by the examples he found in Dresden, Germany, and led him to develop the form for use in national forests, integrating it with the American image of the pioneer campfire.²²²

A large portion of Waugh's booklet was devoted to the ecological principles of "dressing" the margins of forest plantations and the lakeshores that were being created in many wild parks through mass planting of hardwood species and the damming of streams for recreational purposes. Waugh's instructions, unknown in general silviculture, enabled the CCC to shape the boundaries of

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

tree plantations to fit pleasingly into the landscape, to suit the topography, and to blend forest into meadow or prairie. Waugh cautioned his readers that "a genuinely naturalistic planting was excessively difficult to achieve" and that training and a close observation of natural conditions were necessary. Using the example of the "mountain laurel" admired by Downing and adopted for roadside plantings in his home state of Massachusetts, Waugh expounded upon the value of making new plantations of native shrubs, either for wildlife or ornamental purposes.²²³

Waugh recommended dividing the landscape into a series of zones in which dominant species and associated species of trees, undergrowth, and ground covers could be identified. Waugh illustrated his point using plant associations from the forests of western Massachusetts, with which he was familiar. His principles, however, could be applied to any climatic zone, geographical region, and grouping of vegetation. Cross sections of the plant composition and lists of the plants in each zone could be developed from field observations of natural areas similar to that being created or restored.

Waugh's principles of studying and recreating the vegetation zones found in nature were applied to lakeshores in state, county, and metropolitan parks. The artificial development of lakes and ponds altered the relationship between the lake and the surrounding topography and completely displaced the vegetation along the shoreline. Waugh was particularly concerned with the readjustment of flora, and pointed out the need to plant the edges of new lakes in concentric zones of native vegetation, following patterns found in nature. On the creation of artificial ponds, Waugh urged designers to study natural ponds existing nearby and follow the pattern of the natural border of vegetation in planting considerable quantities of native shrubs, trees, and other plants. Waterlines against natural rock outcrops were to closely follow those in nature. Standing timber below the water line was to be removed before flooding, and timber several feet above the water line was also to be cleared and replanted in naturalistic zones.²²⁴

Landscape architects needed a complete knowledge of the species inhabiting a particular area and of the peculiar habits of each. Shrubs were of particular importance but trees also required careful attention. Waugh recognized that the clearing of considerable stretches of lakeshore were necessary for recreational development of beaches and other uses. He warned against artificial lines in delineating any cleared area, and he especially deplored the cement coping that encircled the ponds of city parks. Shores developed for recreational purposes were to be kept clear of campsites and buildings except for boat house facilities that might also take the form of clubhouses and refectories and serve as outlooks over the water.²²⁵

Conclusion

Attempts to establish the Civilian Conservation Corps as a permanent agency failed, and, with the entry of the United States into World War II, the CCC ended. The CCC program had experienced a steady decline with greater and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

greater cuts each year after 1936. By 1938, the National Park Service had 77 camps in national parks and 245 camps in state parks. In 1939, the CCC lost its status as an independent agency and was consolidated with other federal relief programs into the Federal Security Agency on July 1, under the Reorganization Act of 1939. At the end of 1939, when faced with still more cuts to the supervisory force, Conrad Wirth created central service units within the National Park Service regional offices to handle design and technical matters and abolished the positions within the individual camps. Designers became further detached from the natural sites and settings for which they were to design harmonious structures. As the United States became more involved in preparation for war in 1941, additional camps were transferred to wartime preparation and training, and the National Park Service lost 133 CCC camps between September and November 1941. On December 24, 1941, the Joint Appropriations Committee for Congress recommended that the CCC be terminated by July 1, 1942, and subsequent efforts by President Roosevelt to extend CCC funding failed.²²⁶

A number of administrative changes had occurred by the end of the CCC period. Diminishing funds and staff at the regional level meant that regional landscape architects and architects spent less time in the parks and had less familiarity with the parks. Marked changes occurred in the attitude of park designers and advocates by the end of the CCC period, and the Craftsman ethic and attention to detail that had guided the design of structures gave way to a functionalism in design that advocated modern materials, streamlined forms, and mechanized technology.

An era of naturalistic park-building came to a close with the end of the CCC. Although many of the ideas of the past linger on in the stonework of new park buildings and the standards to which park roads are built, economics, changing tastes in design, different attitudes, and increased visitation have changed the way we organize our parklands, use native materials to fashion functional structures, and present the natural wonders entrusted us by the American public. Park managers, public officials, and preservationists are now being called upon to recognize, appreciate, interpret, and protect the legacy left by the park designers of the early twentieth century.

Endnotes

1. This statement of historic contexts in its entirety is taken from Linda Flint McClelland, *Presenting Nature: The Historic Landscape Design of the National Park Service, 1916 to 1942* (Washington, D.C.: National Park Service, 1993), pp. 1-270. Additional references appear in endnotes.

2. Andrew Jackson Downing, "A Visit to Montgomery Place," *Rural Essays* (New York: Hagemann Publishing Company, 1894), pp. 192-202. This essay was originally published in *The Horticulturalist* 2(4):153-160 (October 1847).

3. Andrew Jackson Downing, *Treatise on the Theory and Practice of Landscape*

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Gardening, 9th ed. (New York: Orange Judd, 1875; reprint ed., Little Compton, Rhode Island: Theophrastus Publishers, 1977), pp. 392-399 and 411-412, figs. 78, 79, and 82.

4. *Ibid.*, fig. 83, p. 399.

5. Downing, *Theory and Practice*, pp. 401-410.

6. *Ibid.*, pp. 288-293.

7. Andrew Jackson Downing, "Neglected American Plants," *Rural Essays*, pp. 339-342; Andrew Jackson Downing, "Vines and Climbing Plants," *Rural Essays*, pp. 278-286.

8. National Park Service, *Frederick Law Olmsted: Six Principles of Landscape Design* (Brookline, Massachusetts: Frederick Law Olmsted National Historic Site, National Park Service, n.d., printed pamphlet).

9. Norman Newton, *Design on the Land: The Development of Landscape Architecture* (Cambridge, Mass.: Harvard University Press, 1971), pp. 233-241; quote is from Prince H.L.H. von Pückler-Muskau, *Hints on Landscape Gardening*, trans. Bernhardt Sickert, ed. Samuel Parsons (Boston: Houghton Mifflin, 1917), p. 65, and is given in Newton, p. 239.

10. Frederick Law Olmsted, *Forty Years of Landscape Architecture: Central Park*, ed. Frederick Law Olmsted, Jr., and Theodora Kimball (New York: G. P. Putnam's Sons, 1928; Cambridge, Mass.: MIT Press, 1973), p. 256.

11. *Ibid.*, p. 258; Samuel Parsons, Jr., *The Art of Landscape Architecture: Its Development and Its Application to Modern Landscape Gardening* (New York: Knickerbocker Press, 1915), figs. opp. pp. 180 and 294.

12. Sources for the building of Franklin Park: Historic Photographs, Franklin Park Files, Olmsted National Historic Site, Brookline, Mass.; Cynthia Zaitzevsky, *Frederick Law Olmsted and the Boston Park System* (Cambridge, Mass.: Harvard University Press, 1982); Hubbard, Introduction.

13. William Robinson, *The Wild Garden or the Naturalization and Natural Grouping of Hardy Exotic Plants with a Chapter on the Garden of British Wild Flowers* (London: John Murray, 1870; reprint ed., London: Century Hutchinson Ltd. and National Trust, 1986); Olmsted, *Forty Years*, pp. 353-354.

14. Roger B. Martin, "Metropolitan Open Spaces," in *American Landscape Architecture: Designers and Places*, ed. William Tishler (Washington, D.C.: Preservation Press, 1989), p. 166.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

15. E. Lynn Miller, "Charles Eliot," in Tishler, *American Landscape Architecture*, pp. 53-54; Newton, *Design on the Land*, pp. 318-336.
16. Charles Eliot, *Charles Eliot, Landscape Architect* (Boston and New York: Houghton Mifflin, 1902), p. 655.
17. *Ibid.*, p. 710, January 8, 1896, Eliot to Commissioners of Boston Metropolitan Park System.
18. Wilhelm Miller, *What England Can Teach Us About Gardening*, 1911, pp. x, viii, 48-49, and 62.
19. Wilhelm Miller, *Prairie Spirit in Landscape Gardening*, Circular #184 (Urbana, Illinois: University of Illinois Agricultural Experiment Station, 1915), pp. 2, 5.
20. Robert E. Grese, *Jens Jensen: Maker of Natural Parks and Gardens* (Baltimore: Johns Hopkins University Press, 1992), p. 106-110.
21. *Ibid.*, pp. 47, 52, 76, 82-86, 106-110, and 102.
22. Bulletin on stratified rockwork was Circular 170 (Urbana, Illinois: Illinois Agricultural Experiment Station).
23. Grese, pp. 45-47; Catherine Howett, "Frank Lloyd Wright and American Residential Landscaping." *Landscape Journal* 26(1):33-40; Myron Hunt is probably best known for his design of the Rose Bowl (1932) in Pasadena.
24. Eugene O. Murmann, *California Gardens* (Los Angeles: Eugene Murmann, 1914), pp. 7-9.
25. *Ibid.*, pp. 38-41, 56-57.
26. "The Natural Garden: Some Things That Can Be Done When Nature is Followed Instead of Thwarted," *Craftsman Homes*, ed. Gustav Stickley (New York: Craftsman Publishing House, 1909; reprint ed. New York: Dover, 1979), pp. 112-118; photograph of thatched shelter first appeared in 1907; "What May Be Done With Water and Rocks in a Little Garden." *Craftsman Homes*, pp. 118-124.
27. Henry Vincent Hubbard and Theodora Kimball, *Introduction to the Study of Landscape Design* (1917; reprint, New York: MacMillan Company, 1924), pp. ix-x. Hubbard classified the following styles: the Moorish style of Spain, the Mogul style in India, the styles of the Italian Renaissance and Baroque villas, the style of Le Notre (as apparent at Versailles and Vaux le Comte), the romantic landscape style, the English formal style of the Tudors (Dutch influence), the English Cottage Style, the New England colonial style, the modern German formal

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

style, the Japanese styles, and finally, the modern American landscape style; the Newport garden is illustrated in plate 27; pp.58, 206-207.

28. Ibid., pp. 70-71.
29. Ibid., plates 31-35.
30. Ibid., p. 121.
31. Ibid., pp. 143-145.
32. Ibid., pp. 144-147; plates 27 and 35.
33. Ibid., pp. 195.
34. Ibid., p. 198; drawing XXVI.
35. Ibid., plate 35.
36. Ibid., pp. 189 and 316.
37. Ibid., p. 191.
38. Grese, p. 58; correspondence, Dorothy Waugh to Linda McClelland, 8 May 1989.
39. Frank Waugh, *The Natural Style in Landscape Gardening* (Boston: Richard G. Badger, 1917), pp. 20, 24-25.
40. Ibid., pp. 48-50 and 52.
41. Ibid., pp. 50-51.
42. Ibid., pp. 98, 101, and 103.
43. Ibid., pp. 120-123 and 82-84.
44. Ibid., pp. 136-138.
45. Information on the Shingle style features comes from: Vincent J. Scully, Jr. *The Shingle Style and The Stick Style* (New Haven and London: Yale University Press, 1977), pp. 71-112.
46. Harvey H. Kaiser, *Great Camps of the Adirondacks* (Boston: David R. Godine, 1986), pp. 12-13, 64-67, 81 and 155.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

47. Ibid., p. 65.
48. Ibid., p. 77.
49. Augustus D. Shepard, *Camps in the Woods* (New York: Architectural Book Publishing Company, 1931), p. 1 and 24.
50. H. V. von Holst, *Modern American Homes* (Chicago: American Technical Society, 1913; reprinted as *Country and Suburban Homes of the Prairie School Period*, New York: Dover Publications, 1982), p. i.
51. Information on Japanese influences comes from Clay Lancaster, *The American Bungalow, 1880-1930* (New York: Abbeville Press, 1985), p. 122; Randell Makinson, *Greene and Greene: Architecture as a Fine Art* (Salt Lake City: Peregrine Smith Books, 1977), p. 32.
52. Ibid., pp. 90-91; article was reprinted in Gustav Stickley, ed., *Craftsman Bungalows: 59 Homes from the "Craftsman"* (New York: Dover Publications, 1988), pp. 40-43.
53. The Greene and Greene buildings are published in Makinson, pp. 113-115 and 187.
54. For further explanation of the English influence on the work of Maybeck and other Bay Area architects, see Richard Longstreth, *On the Edge of the World: Four Architects in San Francisco at the Turn of the Century* (Cambridge: MIT Press, 1983); Kenneth H. Cardwell, *Bernard Maybeck: Artisan, Architect, Artist* (Salt Lake City: Peregrine Smith Books, 1977), pp. 153-155; Laura Soullièrre Harrison, *Architecture in the Parks* (Washington, D.C.: National Park Service, 1986), pp. 77-80, 174-178, and 200-205.
55. Harrison, p. 10, pp. 62-69.
56. Ibid., 11, 136-144, and 160-165.
57. Ibid., pp. 10-11.
58. Virginia Grattan, *Mary Colter: Builder Upon the Red Earth* (Flagstaff, Arizona: Northland Press, 1980), pp. 2, 26, and 73.
59. Stickley, *Craftsman Homes*, pp. 102-112.
60. Laura Wood Roper in an introductory note to "The Yosemite Valley and the Mariposa Big Trees," *Landscape Architecture* 43:12-13.
61. John Ise, *Our National Park Policy: A Critical History* (Baltimore:

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Maryland: Johns Hopkins University Press, 1961), p. 18.

62. Newton, pp. 558-561.

63. Statistics are taken from Beatrice Ward Nelson, *State Recreation: Parks, Forests, and Game Preserves* (Washington, D.C.: National Conference on State Parks, 1928); Newton, pp. 560-569.

64. *Proceedings of the Fourth National Parks Conference*, Washington, D.C., January 2-6, 1917 (Washington, D.C.: Government Printing Office, 1917), pp. 153-161.

65. "Editorial--Outdoor Recreation," *Landscape Architecture* 14(1925): 287-288.

66. Nelson, p. 86; Newton, pp. 555-564.

67. Nelson, p. 6; Raymond H. Torrey, *State Parks and Recreational Uses of State Forests* (Washington, D.C.: National Conference on State Parks, 1926); Herbert Evison, ed., *A State Park Anthology* (Washington, D.C.: National Conference on State Parks, 1930).

68. Newton, pp. 555-564; *Landscape Architecture*, Vol. VII, pp. 65-72." *Landscape Architecture*, Vol. XXII, October 1931. Herbert Evison, ed., *A State Park Anthology*, 1930.

69. Richard B. Watrous, "Our National Parks: A Conference," *Landscape Architecture* 6(3):104.

70. Henry Vincent Hubbard and Theodora Kimball, *An Introduction to the Study of Landscape Design* (New York: MacMillian Company, 1924), p. 74.

71. Frederick Law Olmsted, Jr., "National Parks and Forests: Inherent Values," *Landscape Architecture* 48(3):155, from a paper read at the annual meeting of the American Civic Association in 1921.

72. Henry Hubbard, "The Designer in National Parks," *Landscape Architecture* 38(2):60; originally published in 1941 *Yearbook: Park and Recreation Progress* (Washington, D.C.: Government Printing Office, 1942), p. 39; Hubbard, "Landscape Development Based on Conservation," *Landscape Architecture* 29(3):105-121.

73. The Organic Act of August 25, 1916 (39 Stat. 535) established the National Park Service. It was not organized until a later act of April 17, 1917 (Public, No. 2, 65th Congress). Stephen T. Mather was appointed the first director of the National Park Service and Horace Albright assistant director. *Annual Report of the Department of the Interior*, 1917 (Washington, D.C.:

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Government Printing Office, 1918), p. 76. Hereafter notes indicate references to annual reports by year and "AR."

74. *Proceedings of the National Parks Conference, Berkeley, California, March 11-13, 1915* (Washington, D.C.: Government Printing Office, 1915), p. 8-29.

75. *Proceedings*, 1915, pp. 61, 64-65, 68; quote is from p. 67.

76. *Ibid.*, p. 53.

77. *Proceedings*, 1915, pp. 17-19.

78. 1918 AR, pp. 815 and 1076.

79. *Ibid.*, pp. 813-814.

80. *Ibid.*, pp. 1074-1075.

81. *Ibid.*, pp. 814 and 1075.

82. *Ibid.*, pp. 1074-1075.

83. 1919 AR, p. 939 and 1175; Punchard visited Yellowstone, Yosemite, Grand Canyon, Rocky Mountain, Mount Rainier, Crater Lake, Sequoia and General Grant, and Hawaii, and inspected several national monuments; Charles Punchard, "Landscape Design in the National Park Service," *Landscape Architecture* 10:144-145.

84. 1919 AR, p. 1176.

85. *Ibid.*, p. 960.

86. 1920 AR, pp. 94-95 and 1075.

87. *Ibid.*, pp. 94 and 333; 1921 AR, p. 274.

88. 1920 AR, p. 95 and 995

89. 1919 AR, p. 1180.

90. *Ibid.*, p. 940.

91. 1921 AR, p. 278.

92. 1926 AR, p. 17; 1925 AR, p. 79.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

93. 1923 AR, p. 54.
94. William Tweed, Laura E. Soullière, and Henry G. Law, *National Park Service Rustic Architecture: 1916-1942* (San Francisco: National Park Service), 1977, p. 30; 1920 AR, p. 96; 1923 AR, pp. 39-40; 1926 AR, p. 155.
95. Herbert Maier, "The Purpose of the Museum in the National Parks," *Yosemite Nature Notes* V(3):37-40, March 31, 1926; quote is from p. 38 and also appears in Tweed, pp. 40-41.
96. Harrison, pp. 212-219.
97. Tweed, pp. 30-31.
98. Joyce Zaitlin, *Gilbert Stanley Underwood* (Malibu, California: Pangloss Press, 1989), pp. 11, 14, and 42-48; Tweed, *Rustic Architecture*, 1977, pp. 41-44.
99. Zaitlin, p. 35-42; 1925 AR, p. 132.
100. 1925 AR, p. 135.
101. Ise, pp. 30 and 127; Mary Shivers Culpin, *Historic Roads of Yellowstone National Park Multiple Property Documentation Form (draft)*, section F, pp. 6-11; Culpin, footnote 26.; 1921 AR, p. 57.
102. Dwight A. Smith, *Columbia River Highway Historic District*, NRHP Inventory-Nomination Form, October 3, 1983.
103. Hubbard, *Introduction*, p. 220; *Specifications for Forest Road Construction* (Washington D.C.: Government Printing Office, 1927).
104. Waugh, *Natural Style*, pp. 10 and 120-121.
105. Hubbard, *Introduction*, pp. 219-220.
106. 43 Stat. 90; Official correspondence, Demaray to John J. Blaine, U.S. Senate, 10 October 1927, Record Group 79, National Archives, Washington, D.C.; Ise, p. 3237; 1931 AR, p. 111.
107. 1926 AR, p. 155; "Memorandum of Agreement Between the National Park Service and the Bureau of Public Roads Relating to the Survey, Construction, and Improvement of Roads and Trails in the National Parks and Monuments." 18 January 1926, No. 100072, Record Group 79, National Archives, Washington, D.C.
108. Ibid.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

109. 1926 AR, p. 15-16. Note: "Landscape protection" mentioned in earlier reports is now called "preservation of park scenery."
110. Office Order, undated, Record Group 79, National Archives, Washington, D.C.
111. Ibid.
112. William Carnes, "Profiles of NPS 'Greats': Tom Vint," *Courier* 3(9):23; "Personnel Information Sheet" for Thomas Chalmers Vint, U.S. Civil Service Commission, July 1940, Form 3464, Files of Charles E. Peterson.
113. Job Description for Assistant and Junior Landscape Architects, n.d., ca June 1928, pp.1-2. Record Group 79, National Archives, Washington, D.C.; Tweed, *Rustic Architecture*, credits Sager with assisting Vint on the civil service standards; Tweed p. 47.
114. Job Analysis, Assistant Landscape Architect, n.d., ca June 1928, Record Group 79, National Archives, Washington, D.C.
115. Official correspondence, Vint to Director, 9 June 1928, Record Group 79, National Archives, Washington, D.C.
116. Memorandum, Vint to staff, 8 June 1929, Record Group 79, National Archives, Washington, D.C.
117. 1929 AR, p. 165; official correspondence, Mather to MacDonald, 16 August 1928, Record Group 79, National Archives, Washington, D.C.
118. Correspondence, Albright to Vint, 16 June 1929, Record Group 79, National Archives, Washington, D.C.; John C. Olmsted, "The Treatment of Slopes and Banks," *Garden and Forest*, September 5, 1888, pp. 326-327.
119. Official correspondence, Carpenter to Hewes, 10 February 1931, Record Group 79, National Archives, Washington, D.C.; official correspondence, Vint to Director, 20 March 1931, Record Group 79, National Archives, Washington, D.C.
120. 1932 AR, p. 28; 1932 AR, pp. 28 and 182; Plan 2015, 23 February 1938; Plan 2010, 19 August 1937.
121. Hubbard, *Introduction*, pp. 149-150; Waugh, "Ecology of the Roadside," *Landscape Architecture* 21(2):35-38.
122. Landscape architect's reports, Davidson to Vint, 1927, Record Group 79, National Archives, San Bruno, Calif.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

123. "1930 Fieldwork on Naturalization Data Requested," Record Group 79, National Archives, Washington, D.C.
124. Report to Thomas Vint on Emergency Conservation Work in Mt. Rainier National Park--1934 Season, Third Enrollment Period, Record Group 79, National Archives, Washington, D.C.
125. Ibid.
126. General Provisions of June 1929, Albright to Vint, 16 June 1929, Record Group 79, National Archives, Washington, D.C.
127. Hubbard, *Introduction*, p. 199.
128. Standard Architectural Details for Stone Guardrail Types, December 1929, Denver Service Center, Technical Information Center; Standard Architectural Details for Wood Guardrail Types, December 1929, Denver Service Center, Technical Information Center.
129. PG AP-3-2 sheets, 16 December 1929, National Park Service, Denver Service Center, Technical Information Center.
130. PG 2042 and PG 2043, National Park Service, Denver Service Center, Technical Information Center.
131. Quote is from Hubbard, *Introduction*, p. 200.
132. NP-YOS-50, 18 July 1921, National Park Service, Denver Service Center, Technical Information Center; this design basically followed the Swan bridge in Central Park.
133. White River Bridge, 14 June 1928, R-814, National Park Service, Denver Service Center, Technical Information Center; AR 1928, p. 165.
134. Standard Architectural Details--Headwalls for Culverts, 24 August 1928, AP-81, National Park Service, Denver Service Center, Technical Information Center.
135. Draft report, Meeting of the Committee of Expert Advisers, Yosemite National Park, 24-25 April 1930, F. L. Olmsted, Jr. Job 8099, National Park Service, Frederick Law Olmsted National Historic Site.
136. 1929 AR, p. 30; 1931 AR, p. 111.
137. Dr. L. I. Hewes, "Minutes of the Twelfth Conference of National Park Executives, Hot Springs National Park, Arkansas, April 3 to 8, 1932", document

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

- 65378 (Washington, D.C.: National Park Service, mimeo.), p. 113.; Two years later in *Civil Engineering*, Hewes credited the Landscape Division with "guiding the design of Bureau of Public Roads" and with influencing the state highways of Western states; L. I. Hewes, "America's Park Highways," *Civil Engineering*, 1934, quoted in Culpin, ft. 25.
138. William Tweed, National Register of Historic Places Inventory-Nomination Form for Moro Rock Stairway, 29 May 1977.
139. Ptarmigan Wall Tunnel, Drawing S4934, Glacier National Park, National Park Service, Denver Service Center, Technical Information Center.
140. Engineering Division, "Standards for Trail Construction," San Francisco, Calif., October 1934, PG 5088, National Park Service, Denver Service Center, Technical Information Center.
141. Ibid.
142. 1930 AR, p. 186; official correspondence, Vint to All Superintendents, 5 September 1930, Record Group 79, National Archives, Washington, D.C.; official correspondence, A. E. Demaray to P. J. Jennings, September 1931, Record Group 79, National Archives, Washington, D.C.; sheets were numbered A 912-A, B, and C, National Park Service, Denver Service Center, Technical Information Center.
143. "Portfolio of Representative Structures Designed by the Landscape Division, National Park Service," (San Francisco: Landscape Division, National Park Service, n.d., ca. 1932).
144. Albert H. Good, *Park Structures and Facilities* (Washington, D.C.: National Park Service, 1935), p. 176; Mary Shivers Culpin, NRHP Inventory-Nomination Form for Obsidian Cliff Kiosk, 30 November 1981.
145. Waugh, *Outdoor Theaters* (Boston, Wiley and Sons, 1917); California had several other well-known outdoor theaters, including one at Pomona State College by Myron Hunt.
146. 1932 AR, p. 109.
147. The Forestry Division was also concerned with insect control and measures to bring white pine blister rust and other forest infestations under control.
148. 1925 AR, p. 136.
149. Official correspondence, Vint to F.E. Kannermeyer, 3 May 1927, Record Group 79, National Archives, Washington, D.C.; Report to Landscape Division, 5-15 September 1927, Record Group 79, National Archives, San Bruno, Calif.;

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Report to Landscape Division, 5-22 October 1927, Record Group 79, National Archives, San Bruno, Calif.; the list of plants has been compiled from Jerry F. Franklin and C.T. Dyrness, *Natural Vegetation of Oregon and Washington* (Portland, Oregon: Pacific Northwest Forest and range Experiment Station, USDA Technical Report PNW-8, 1973), and Jerry F. Franklin, et al, *The Forest Communities of Mount Rainier National Park* (Washington, D.C.: National Park Service, 1988).

150. Vint to Resident Landscape Architects, "1930 Fieldwork on Naturalization Data Requested," Record Group 79, National Archives, Washington, D.C.

151. 1930 AR, p. 31.

152. Memorandum, Albright to All Superintendents and Concessionaires, 11 November 1930, National Archives, Record Group 79, Washington, D.C.

153. Joseph Grinnell and Tracy Storer, "Animal Life as an Asset of National Parks," *Science* 44:375-380; Charles C. Adams, of the New York State College of Forestry, "The Relation of Wild Life to the Public in National and State Parks," *Proceedings of the Second National Conference on State Parks, 1922*, (Washington, D.C.: National Park Service, 1922), pp. 129-147; quote is from p. 137.

154. 1932 AR, p. 8; CCC Handbook, Washington, D.C. undated; a memorandum issued to the CCC in 1935 reemphasizing the prohibition of introduced species made an exception for historic units of the National Park Service, many of which were added to the park system in 1933 and afterwards.

155. 1929 AR, p. 171.

156. 1931 AR, p. 135.

157. 1931 AR, p. 137.

158. 1931 AR, p. 72; 1930 AR, p. 31.

159. Memorandum, Cammerer to All Superintendents, 30 August 1930, Record Group 79, National Archives, Washington, D.C.

160. Meinecke, *Camp Ground Policy*, p. 1, cited E. P. Meinecke, "A Report upon the Excessive Tourist Travel on the California Redwood Parks" (Sacramento: California Department of Natural Resources, Division of Parks, 1928).

161. *Ibid.*, p. 8-10.

162. *Ibid.*, p. 14.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

163. Official correspondence, Kittredge to Meinecke, 30 January 1935, 7:378.
164. Ibid., p. 15; later such irrigated or spring-fed sites were used as campgrounds in Carlsbad Cavern and Big Bend National Parks.
165. E. P. Meinecke, *Camp Planning and Camp Reconstruction* (California Region: U.S. Forest Service, n.d., ca. 1934), p. 8.
166. 1932 AR, pp. 7-9.
167. Ibid., p. 8.
168. Ibid.
169. "Minutes of the Twelfth Conference of National Park Executives, Hot Springs National Park, Arkansas, April 3 to 8, 1932," p. 92, mimeo.; 1926 AR, p. 155.
170. "Minutes," 1932, p. 94.
171. Thomas C. Vint, "National Park Service: Master Plans," *Planning and Civic Comment*, reprint, April/June 1946.
172. National Park Service, *Master Plans: A Manual of Standard Practice for Use in the National Park Service* (Washington, D.C.: National Park Service, 1939).
173. Vint, "Master Plans."
174. National Archives, *Records of the Public Works Administration, Preliminary Inventory No. 125* (Washington, D.C.: National Archives and Records Service), p. 3. Ickes held this position in tandem with his position at the Department of the Interior until 1939, when the agency was replaced by the Federal Works Agency and restructured under the Reorganization Act of 1939.
175. Russell Olson, *Administrative History: Organizational Structures of the National Park Service, 1917 to 1985*, chart 10; National Park Service, "Report on the Building Program from Allotments of the Public Works Administration, 1933-1937, Western Division" (San Francisco: Western Division, National Park Service, 1938), p. 8. The report was compiled by Edward Nickel, architect, Branch of Plans and Designs.
176. National Park Service, "Building Program from Allotments of the Public Works Administration," p. 2-10.
177. Ibid., pp. 12-13.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

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179. Paige, pp. 9-11.
180. *Ibid.*, pp. 19 and 21-23; Paige says that the 1936 personnel reduction was partly an economy measure, but also partly an effort by President Roosevelt to create a smaller agency that might be made permanent.
181. Official correspondence, Tomlinson to all Camp Superintendents, Mount Rainier National Park, 10 June 1933, Record Group 79, National Archives, Washington, D.C.
182. Narrative Report, period ending 30 September 1934, Camp NP-2, Grand Teton National Park, Record Group 79, National Archives, Washington, D.C.
183. C. G. Thomson, "Summary of Work to Be Accomplished by Civilian Conservation Corps, Yosemite National Park," n.d., Record Group 79, National Archives, Washington, D.C.
184. Final Report, Comfort Station, PWA Project FP-68, Ranger Station, PWA Project FP-71, February 1934; ECW Quarterly Report, Wawona Camp, NP-1, Yosemite National Park, July 1934, Record Group 79, National Archives, Washington, D.C. Because this report gave only vague common names, the attributions of genus and species have been drawn from Jepson, *Flowering Plants of California*, and "Landscape Plants for Yosemite Park," Files of the Planning Office, Yosemite National Park, Mimeo.; ECW Quarterly Report, Wawona Camp, NP-1, Yosemite National Park, October 1934, Record Group 79, National Archives, Washington, D.C.; ECW Quarterly Report, Cascades Camp, NP-6, Yosemite National Park, April 1934, Record Group 79, National Archives, Washington, D.C.
185. Harold Fowler, "Report to Chief Architect, Sequoia National Park, October 1, 1934 to April 1, 1935," Record Group 79, National Archives, Washington, D.C.
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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

Washington, D.C.

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189. Norman Newton, "The Landscape Architect in Public Works," *Landscape Architecture* 24 (October 1933):28-29.
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191. *Ibid.*, pp. 4-5.
192. Hubbard, "Landscape Development," p. 126.
193. 1934 AR, pp. 172-173.
194. 1936 AR, p. 104.
195. "Administration Manual for Recreational Demonstration Areas" (Washington, D.C.: National Park Service, 1941, mimeo.), pp. 1-5.
196. Conrad Wirth, *Parks, Politics and the People* (Norman: University of Oklahoma Press, 1980), pp. 178 and 184-186; "Administration Manual", pp. 2-5.
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201. 1936 AR, pp. 104-105.
202. 1934 AR, p. 175; 1935 AR, pp. 183-184; 1936 AR, pp. 104-105; 1935 AR, pp. 179-180; 1938 AR, p. 35.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

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United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section E

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- 221. Ibid., pp. 10-11.
- 222. Ibid., p. 19.
- 223. Ibid., pp. 28-29.
- 224. Ibid., p. 40 and 46-48.
- 225. Ibid., p. 45.
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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

F. Associated Property Types

Historic park landscapes under the context, The Historic Landscape Design of the National Park Service, 1916 to 1942, are defined as any natural or scenic area established by the federal, state, or local government for the conservation of natural resources and the enjoyment, appreciation, and recreation of the public. Associated property types are entire parks or areas within parks that were developed or improved under the supervision of the National Park Service during the period, 1916 to 1942. Park landscapes include national parks, monuments, and parkways, as well as state and local parks that were developed or improved by the Civilian Conservation Corps (CCC) and Works Progress Administration (WPA) during the New Deal era, 1933 to 1942.

Historic park landscapes fall into two general property types--1.) National Parks, Parkways, and Monuments and 2.) State Parks, County Parks, and Recreational Demonstration Areas. An entire park based on boundaries dating to the period of significance, 1916 to 1942, may be eligible for listing in the National Register of Historic Places as a historic district. Smaller landscapes within parks may also be eligible as historic sites or smaller historic districts; these may be classified in the following landscape types: Park Road Systems and Parkways, Trail Systems, Major Developed Areas and Park Villages, Minor Developed Areas, Designated Natural Areas, Day-use Areas, Overnight Areas, Recreational Facilities, Scenic Overlooks and Pull-offs (along park roads), Scenic Resources and Overlooks, Entranceways, Waysides (for parkways and recreational demonstration areas), Campgrounds, Picnic Areas, Organization Camps (for state parks and recreational demonstration areas), and Civilian Conservation Corps (CCC) Camps. With special justification, individual resources--buildings, structures, sites, and objects--may be individually eligible for listing, for example, a bridge or building that exhibits fine workmanship of naturalistic stonemasonry or logwork.

The multiple property group, Historic Park Landscapes in National and State Parks, covers landscapes within natural parks or recreational parks where natural resources and features predominate. Historical sites, battlefields, archeological sites, memorials, national forests, and urban parks having similar characteristics or associations with the New Deal programs of the 1930s, including the CCC, WPA, and Public Works Administration (PWA), are not included in the multiple property group. They may be nominated to the National Register on individual registration forms or in other multiple property groups.

Historic park landscapes in national and state parks meet the definitions of designed and rural landscapes. These are designed historic landscapes because they have been legally designated as parks having

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

definite boundaries, were created for the purpose of conservation and/or outdoor recreation, and were developed according to the principles of landscape architecture and planning. Because of their rural location, extensive acreage, mixed uses, and natural character, they are also rural historic landscapes and can be documented using the landscape characteristics outlined in *National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes* (1990). Circulation networks, response to natural environment, land uses and activities, vegetation related to land use, clusters, and small-scale features are particularly useful characteristics to consider when evaluating historic park landscapes. For example, the design of roads, trails, and buildings was directly influenced in response to the natural topography, climate, and vegetation, and the presence of native building materials such as stone, adobe, or timber.

The following section addresses selected methods and sources for research and fieldwork, including a discussion of how the landscape characteristics outlined in *Bulletin 30* apply to historic park landscapes. Descriptions and registration requirements for associated property types follow. This information is intended to assist those using this multiple property documentation form to examine the historic development of a national or state park and to identify historic park landscapes that may be eligible for listing in the National Register for Historic Places.

Researching the Historic Development of a National or State Park: Methods and Sources

A study of the historic development of a national or state park requires a combination of historical documentation and field work. Researchers and field surveyors should be familiar with the historic context in Section E of this multiple property documentation form and have a general understanding of the techniques for evaluating and documenting historic landscapes set forth in *Bulletin 30*. They should also have a preliminary understanding of the reasons the park under study was designated for conservation or recreation and be able to identify the park's primary natural and recreational resources.

A bibliography of secondary sources should be compiled and examined for the park under study prior to conducting any research of primary sources or a field survey of a national park landscape. A familiarity with these sources will help the researcher develop a strategy for further research and fieldwork. The bibliography should include park administrative histories, historic resource studies, List of Classified Structures (LCS), Cultural Landscape Inventory (CLI), cultural landscape reports, historic structures reports, National Register multiple property documentation forms

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

and nomination forms, and general histories of each park as well as regional studies for the area where the park is located. For state park landscapes, similar reports, studies, and inventories may be available and should be consulted; the State Historic Preservation Office can provide information about state planning contexts, state surveys, and other documentation relating to state parks. An explanation of the National Park Service philosophy for naturalistic park design and exemplary examples of state and national park development appear in *Park Structures and Facilities* (1935) and *Park and Recreation Structures* (3 vols., 1938) published by the National Park Service.

Primary sources should be consulted to fill gaps in the secondary literature. The following provide information useful in documenting historic park landscapes.

MASTER PLANS

The statement of 1918 establishing a policy for the development and management of national parks called for a comprehensive plan prior to developing facilities that might impair or damage the natural qualities for which the parks had been designated. Early park development was guided by the development of plans for park villages. This was carried out by the park service's landscape engineer with the advice and consultation of park service officials, park superintendents, civil engineers, park concessionaires, and members of the National Commission on Fine Arts. At Yosemite and Grand Canyon, professionals from private practice played a leading role in the design of village plans.

The Landscape Division began working with park superintendents to develop five-year plans in the late 1920s, with the earliest plans being developed for Mount Rainier National Park and Crater Lake National Park. In 1929, the Landscape Division took on the task of developing plans for all parks over a three-year period. The plans had three-parts: a park development outline covering the existing condition of the park and proposals for future development; a general plan, graphically represented on scale drawings; and a six-year plan for development. By the end of 1932, comprehensive plans, then called "master plans," were completed or in process for all park units. They continued to be updated annually until 1942, when, due to World War II, national park development was drastically curtailed. The revision of master plans resumed after World War II, and received renewed impetus in 1956 with the Congressional authorization of Mission 66, an extensive ten-year building and acquisition program for national parks.

National park master plans covered road systems, trail systems,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

major developed areas such as park villages, and an assortment of minor developed areas such as park entrances, ranger stations, or scenic attractions. A chronological study of plans enables a researcher to trace the physical evolution of the park and to understand the factors determining the park's development. The narratives that accompanied the plans began with a summary of the legislative history of the park, the reasons the park was designated a national park, and a description of the park's significant characteristics. The plans were intended to simultaneously plot existing conditions and propose an ultimate or ideal plan for future development. The six-year plan enabled park superintendents to move toward the ideal by scheduling short-term projects with funds that were available or likely to become available.

The early master plans for many national parks can be found in the collection of the Cartographic Branch of the National Archives at College Park, Maryland, Record Group 79 (Preliminary Inventory 166, entry 32). Complete and partial sets of the plans also exist in the engineering office, library, or archives of many parks. Copies of individual sheets, in some cases, may also be ordered from the Technical Information Center of the Denver Service Center. Master plans for state parks were developed through the CCC program and may be found in state archives or state park offices.

DRAWINGS

Preliminary and final drawings for individual projects were drawn up by park service engineers, landscape architects, and architects as projects proposed on the development outline received funding through public works allotments or park appropriations, or were approved as CCC projects. These drawings contain the dates of design and construction, the names of designers and authorizing officials, illustrations and specifications for the proposed design, and notes on the source of funding. For CCC projects, the plans may also note the camp assigned to carry out the project and the date the work was completed. Copies of many drawings may be ordered from the Technical Information Center of the Denver Service Center. Many historic drawings are on file in park offices. Bureau of Public Roads plans and drawings can also be found in Record Group 30 of the National Archives.

The following types of drawings provide information about design and construction in national parks:

Preliminary and final drawings by the National Park Service's Landscape Division and Branch of Plans and Design depict the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

architectural design of bridges, culvert headwalls, and guardrails; the layout of parking areas, overlooks, village clusters, picnic areas, and campgrounds; and the design of small-scale items such as water fountains, signs, and trail bridges. National Park Service drawings often reflect the principles of landscape preservation and harmonious design and sometimes include detailed planting plans, stone-masonry details, and architectural details. The Landscape Division developed standard designs for the slopes of road embankments, stonemasonry and log guardrails, and culvert headwalls in the late 1920s (see attachments 1, 2, and 3). These designs were revised periodically and the specific designs recommended for a particular park appeared on specialized sheets in the park's master plans.

The National Park Service's Engineering Division produced topographic maps, standard designs for foot and bridle trails, site plans, and drawings and plans related to the development of utilities (water, electricity, sewerage, telephone) for major and minor developed areas. Park engineers were also responsible for the design and maintenance of fire roads, truck trails, and minor roads within developed areas.

Drawings by the engineers of the Bureau of Public Roads provide detailed technical information about the engineering and construction of park roads, tunnels, and bridges. Drawings with topographic elevations depicted each section of the road, identify station numbers, and indicated areas to be cut and filled. Other drawings contain the technical details and designs for the construction of bridges, culverts, drains, retaining walls, guardrail, and other structural features.

NARRATIVE RECORDS

The historical records maintained in the national parks and the National Archives contain several different types of narrative reports that provide valuable information about the design and development of historic park landscapes. They include landscape architects reports, preliminary surveys for roads and trails, progress reports of the CCC, and superintendent's monthly and annual reports. Many of these are richly illustrated with photographs showing work in progress.

The records of the National Park Service (Record Group 79) are described in the *Preliminary Inventory of the Records of the National Park Service* by Edward E. Hill (Preliminary Inventory 166, National Archives, 1966). Additional narrative materials may be found in the

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

National Archives under Record Group 30 for the Bureau of Public Roads (Preliminary Inventory 134) and Record Group 35 for the Civilian Conservation Corps (Preliminary Inventory 11).

Records relating to the work of the CCC in state parks and recreational demonstration areas may also be found in Record Group 79. They include applications, the reports of state park inspectors, and illustrated progress reports (monthly, bi-monthly, semi-annual) submitted to the CCC district offices by the camp superintendents. Many of these are richly illustrated with photographs of work in progress and completed jobs. Copies of these reports may be found in state archives and park offices.

HISTORICAL PHOTOGRAPHS

The National Park Service Historical Photography Collection at the Harpers Ferry Center includes several collections of national park photographs, including those taken by National Park Service photographer George Grant for the Landscape and Educational Divisions beginning in the late 1920s. Many parks, including Yosemite, Yellowstone, and Great Smoky Mountains, maintain extensive collections of historical photographs. Historical photographs may also be found in the Audio-Visual Division of the National Archives under the Records of the National Park Service (Record Group 79) and Records of the Bureau of Public Roads (Record Group 30). The National Archives also maintains several collections of photographs showing WPA and CCC work in state parks and recreational demonstration areas.

Fieldwork: Documenting the Landscape Characteristics for Historic Park Landscapes

The landscape characteristics outlined in *National Register Bulletin 30* provide a framework for organizing the information gathered during research and fieldwork. The first four characteristics are processes--natural and cultural--that shaped a landscape during the historic period and link it to significant themes in history. The remaining characteristics are physical components that are evident upon the land and define the landscape's historic character. The primary objective of a field survey is to document the characteristics present within a landscape. The landscape characteristics can be used to gather and organize information about historic park landscapes and their physical and associative characteristics. This information can then be used to classify a landscape by property type and thereby evaluate its historic significance and integrity using the registration requirements for the property type.

A familiarity with the historic master plans and drawings for a

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

particular area before beginning a field survey will help surveyors understand the physical evolution of a park and prepare them to identify and interpret significant landscape features. This knowledge will also help them distinguish contributing from non-contributing resources, and determine the amount of change that has occurred since the historic period. These sources may indicate spatial organization, circulation systems, intended land uses, the presentation of scenic views, the preservation of natural features, the planting of native vegetation, and other aspects of design or design intent that may not be recognizable in the existing landscape.

LAND USES AND ACTIVITIES

The land uses and activities of a historic park landscape can be considered on several scales. At the broadest scale is the primary purpose or use of the park. Many parks have been designated through legislation and the administration of government for the purpose of conserving natural areas containing outstanding natural systems, geological features, wildlife habitats, groves of trees or meadows, or other scenic features. While the first national parks in the West were withdrawn from the inventory of undeveloped federal lands--many primeval in condition, later parks, especially in the East, were the product of reclamation, where deliberate efforts were taken to remove the traces of earlier land uses and to promote the natural regeneration of former fields and pastures, burnt or cut-over forests, and other disturbed areas. Recreation was a corresponding use and, in the broadest sense, meant the enjoyment and appreciation of the natural scenery through activities such as hiking, horseback riding, mountain climbing, motoring, picnicking, and camping. State parks and recreational demonstration areas (and some national parks) also offered more active forms of recreation such as swimming, skiing, boating, fishing, tobogganing, and golf.

Within a park are smaller areas having specific activities or functions, such as roads, trails, a park entrance, an administrative headquarters, a scenic overlook, a maintenance area, or a campground. Park villages usually have multiple uses, including commercial activities, administrative functions, and housing. Some parks, particularly state or local parks, and former recreational demonstration areas, have areas designated for active sports, such as swimming, boating, skiing, golf, and softball. Certain areas within a park such as museum with an outdoor theater, observation terrace, nature trail, native plant garden, and exhibits may have interpretive and educational functions. Others may be the site of patrol cabins or fire lookouts important in protecting the park's natural resources.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Each park also contains facilities that provide essential utilities--telephone, electricity, water, and sewerage--for visitor and administrative use.

Within the comprehensive master plan, the various land use areas within a park are classified as roads, trails, major developed areas, and minor developed areas. The functions of these areas are frequently interconnected and interdependent. Some areas may relate directly to the visitors' experience in the park, while others only to the park's administration and maintenance.

PATTERNS OF SPATIAL ORGANIZATION

The spatial organization of a national or state park is primarily dictated by natural systems and topographic features including mountains, valleys, canyons, rivers and streams, ponds and lakes, ridges, plains, forests, prairies, bluffs, and buttes. The location of roads and consequently park villages was historically dictated by natural topography and climate. Determining factors included concerns for scenery preservation, the ability to traverse mountainous terrain, the availability of water, and the feasibility and costs of maintaining roads in extreme weather conditions. The location of roads was also dictated by the circulation networks existing outside the park and the corridors along which visitors approached the park from urban centers or railroad connections along state highways or roads through national forests. The location of trails depended on automobile access along park roads, but moreover on scenic features and ideas about how the parks' splendors could be best presented to hikers or riders on horseback.

Master plans graphically and in narrative form represented the relationship of all manmade improvements to the natural topography of the park. They provided a "complete" view of the park's geographical location and natural topography, the park's relationship to regional transportation networks, and the manmade improvements existing or proposed for the park at a specific date. They also indicate the relationship of developed areas to wilderness areas, which were to be left undisturbed by motor roads or settlements. Principles of naturalistic landscape design drawn from the design of 19th century urban parks and pleasure grounds to a large extent influenced the spatial organization of roads, trails, and developed areas within natural parks.

RESPONSE TO THE NATURAL ENVIRONMENT

This is the most salient landscape characteristic applying to natural parks. It relates primarily to the presence of natural

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

features and systems and the overarching purpose to preserve the natural environment and make it accessible for the appreciation and enjoyment of the general public. Topography, climate, and natural features, first of all, dictated the designation of these places as parks, and, secondly, influenced the location and design of all manmade improvements. Roads, trails, and developed areas were located in response to these features, often in an effort to present the most scenic views while preserving the natural beauty. Moreover, the importance of the natural environment led to the development of principles and standards for the design and construction of roads, trails, and other facilities that called for harmony with nature, minimal disturbance to natural features, and a blending of manmade and natural features. For example, roads were built to disturb the natural topography as little as possible by minimizing the amount of cut and fill, by constructing culverts to accommodate the drainage of natural streams, and by flattening, rounding, and planting road embankments so they blended into the surrounding setting.

Scenic considerations guided the location and character of development in natural parks. Park museums, overlooks along park roads and trails, observation lookouts, fire lookouts, and other facilities were typically located and oriented in relationship to the natural environment. The intent to present nature at its best without impairing the view influenced the development of overlooks, location of roads and trails, clearing of vegetation (vista-clearing), the planting and transplanting of native vegetation, and the preservation or planting of vegetative screens.

CULTURAL TRADITIONS

Cultural traditions have influenced the design of national and state parks in several ways. Evidence of cultural traditions exists in 1.) the use of accepted practices and principles of American park design and landscape architecture in developing parks for visitor use and enjoyment; 2.) the influence of pioneer-era, ethnic, and indigenous building types, construction methods, and materials in the construction of buildings, walls and fences, and bridges; 3.) adherence to a craftsman ethic of construction, design, and planting.

CIRCULATION NETWORKS

Parks typically contained several independent circulation networks that may or may not interconnect: motor roads, administrative roads, fire roads and truck trails, foot trails, and bridle trails. The principal motor roads connect the park at park entrances with state highways and roads through national forests. Truck trails are used

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

administratively to protect the park against poachers and to control fires, and are usually inaccessible to visitors except those on foot or horseback. Trails--foot and bridle--were intended to provide the visitor access to the parks outlying features and scenic wonders, including wilderness areas undisturbed by motor roads. Each developed area of the park had its own circulation network of paths, minor roads, parking, and connection to motor roads and trails. In parks such as Acadia, transportation by water was also a significant factor in planning the park's circulation network.

Motor roads led to the principal centers of scenic interest and visitor facilities such as campgrounds, scenic areas, and park villages. Built through a cooperative agreement with the U.S. Bureau of Public Roads, major park roads were designed to present the scenic beauty of the park through unravelling panoramic views and to provide access to trails that penetrated the back-country. Motor roads were designed to follow the contours of the natural topography, accommodate natural patterns of drainage, and to blend into the surrounding scenery.

BOUNDARY DEMARCATATIONS

The boundaries of parks were determined legislatively and land was acquired through the transfer of ownership from one government to another, through purchase or donation, and, in some cases, through condemnation. Park boundaries are not necessarily marked by physical barriers such as fences or walls, although the boundaries along highways or motor roads are marked by signs, entrance stations, or gateways. In keeping with the naturalistic intent of a park's design, boundaries tend not to have recognizable boundary demarcations. In some cases, where fences were deemed necessary, they took the form of unobtrusive enclosures.

VEGETATION RELATED TO LAND USE

Park landscapes typically include three kinds of vegetation. 1.) Naturally occurring trees, shrubs, and plants create the park's setting and, in many cases, contribute to the natural significance for which the park was designated. 2.) Native trees, shrubs, ground covers, and other plants were planted or transplanted for a variety of purposes: to naturalize areas disturbed by construction, to eliminate the traces of old roads and homesteads, to beautify park roads and villages, to screen facilities from view, to enframe scenic views, and to control erosion. 3.) Native trees, shrubs, and other plants were introduced on a large scale to revegetate burnt, lumbered, or eroded areas or reclaim submarginal agricultural and mining land.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

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United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Vegetation on the embankments of park roads typically resulted from either a natural process of revegetation or from planting projects to control erosion. During construction in minor and major developed areas, mature trees were preserved wherever possible. Vegetation--in the form of native ground covers and understory shrubs--was afterwards reintroduced to erase the scars of construction and to enhance the natural setting. Planted and transplanted vegetation commonly took the form of foundation plantings around buildings or bridge abutments, planted islands at overlooks and parking areas, and interpretive wild gardens. Because plantings were native species and were intended to be naturalized, it is often impossible to discern planted or transplanted vegetation from the naturally occurring vegetation of the park.

BUILDINGS, STRUCTURES, AND OBJECTS

Various types of buildings, structures, and objects serve the needs of visitors, concessionaires, and park staff. These vary in type and are constructed and operated by the park or a concessionaire. Many facilities--comfort stations, museums, lodges, cabins, and picnic shelters--are intended to accommodate park visitors for safety, comfort, and pleasure. Others serve administrative purposes such as the back-country patrol cabins, ranger stations, and maintenance shops. Buildings with particular functions developed to meet the specialized needs of outdoor recreation, for example, community buildings built at campgrounds to provide ranger quarters, a room for public lectures, rest rooms, and showers for bathing. Buildings range in size and complexity from simple patrol cabins and comfort stations to administration buildings and museums. Structures include bridges, tunnels, culverts, road structures, guardrails, observation terraces, and stairways. Objects include features such as signs and water fountains.

The manmade buildings, structures, and objects within a park commonly exhibit similar principles of rustic design, native building materials drawn from the natural environment, and methods of construction derived from the vernacular, indigenous, and pioneering prototypes of the surrounding region. While floor plans, dimensions, and structural aspects of park buildings and structures may reflect standard servicewide designs, the external design of structures differs from park to park based on local geography and climate and the talents of the resident landscape architects, architects, and engineers. Buildings and structures within a park generally follow a common architectural scheme based on the unique natural character and history of the region where the park is located.

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

CLUSTERS

Major and minor developed areas are the typical clusters found in national parks. They serve a variety of functions, such as entrance stations, campgrounds, park villages, park housing, maintenance, and fire protection, and they typically contain buildings, structures, objects, vegetation, and other landscape features. Day-use areas, overnight areas, organization camps, and recreational facilities are the typical clusters found in state parks and recreational demonstration areas. Master plans provide detailed descriptions of the arrangement and composition of buildings, structures, roads, and trails within these areas, and can help surveyors identify clusters and trace their evolution.

The built features within clusters follow a common architectural scheme using native materials, pioneering or indigenous methods of construction, and principles of design that harmonized with the natural setting and adapted to the local climate. Clusters within parks frequently incorporate native vegetation and scenic views and interconnect with hiking and bridle trails and motor roads. Developed areas of parks were typically arranged according to naturalistic principles of landscape design that called for curvilinear roads and trails, including loop roads, and the naturalistic siting of buildings and structures in relationship to scenic views or screens of vegetation.

Several other kinds of facilities found in state and national parks may be examined as clusters. The development of a scenic overlook consists of a roadway, parking area, and observation terrace with a guardrail, sidewalk, and curbing; there may also be signs, interpretive exhibits, comfort facilities, benches, and water fountains. Museums with observation terraces, nature trails, outdoor amphitheaters, nature gardens, and exhibits form clusters that may also encompass nearby natural features for interpretation purposes.

ARCHEOLOGICAL SITES

Remnant sites of CCC camps, fishing and hunting camps, abandoned and reclaimed homesites, millsites, remnant orchards, mining and lumbering operations, and quarries are some of the historic archeological sites that may be found in state and national parks. Because the National Park Service made efforts to eliminate the traces of old roads, homesites, and camps through landscape naturalization and reclamation projects, the sites of historic activities predating a park's founding or associated with road construction or CCC occupation may have little or no surface remains. Sites used by Native American or prehistoric cultural groups are likely to remain intact in the

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

undisturbed natural areas of a park.

SMALL-SCALE ELEMENTS

These are the small-scale built features found along roads or trails or in developed areas. They include curbs, minor signs, fireplaces, benches, markers, foot bridges, and picnic tables and often contribute strongly to the historic character of historic park villages and other clusters. These elements are likely to reflect the craftsmanship, native materials, and naturalistic principles of design found in the larger built features of the park.

Classifying and Evaluating Historic Park Landscapes by Property Types

The Secretary of the Interior's Standards for Identification, Evaluation, and Registration call for the identification of property types and characteristics--physical and associative--in evaluating the historical significance of a historic property. The landscape characteristics typically found in state and national parks can be organized into the general property types and landscape sub-types listed below. Keep in mind that landscape characteristics, whether processes or components, are integral to all of these property types but the extent to which they may be present differs. The characteristics for land uses and activities, spatial organization, response to the natural environment, cultural traditions, vegetation related to land use, circulation networks, and clusters are particularly relevant to the history of state and national parks and should be discussed when documenting properties belonging to the multiple property group.

GENERAL PROPERTY TYPES

National Parks, Parkways, and Monuments

This landscape type includes significant natural areas that have been designated by the United States Congress as national parks, national monuments, or national parkways for the purposes of conservation and public appreciation and enjoyment. Properties of this type must have been administered by the National Park Service during all or part of the period 1916-1942. The first plans for national parks called for the development of roads, trails, and centralized park villages housing administrative functions and visitor services. Gateways were placed at park boundaries, and ranger stations, fire lookouts, and patrol cabins were constructed in outlying areas. Popular scenic attractions, such as hot springs and rimside overlooks, were developed with walks, stairways, and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

protective railings. As the master planning process evolved from 1926 to 1942, park facilities were classified in several categories: road system, trail system, major developed areas, and minor developed areas. Special kinds of facilities could be constructed under one or more categories, for example, a campground might be situated along a major park road or in a minor developed area that also contained a park museum, concessionaire's lodge and cabins, and interpretive trail. Areas not traversed by major roads or designated as developed areas were considered wilderness areas.

Entire national parks, monuments, or parkways based on historic boundaries or smaller areas within such parks may be listed in the National Register of Historic Places under the Historic Park Landscapes in National and State Parks multiple property group. For a list of the landscape types and physical characteristics comprising this property type, see the sections that follow for:

- Park Road Systems and Parkways
- Trail Systems
- Major Developed Areas and Park Villages
- Minor Developed Areas
- Designated Natural Areas (national parks)
- Entranceways
- Scenic Overlooks and Pull-offs (in conjunction with roads)
- Scenic Resources and Overlooks
- Waysides (parkways and recreational demonstration areas)
- Campgrounds
- Picnic Areas
- Civilian Conservation Corps (CCC) Camps

State Parks, Country Parks, and Recreational Demonstration Areas

This landscape type includes natural areas established by state or local governments for the conservation of natural resources, the enjoyment of scenery, and outdoor recreational use by the public. Country parks are defined as natural areas established by county, metropolitan, municipal, and other local governments for conservation and outdoor recreation and possessing many of the physical and associative characteristics common to state parks. Recreational Demonstration Areas form a finite group of parks that were developed from submarginal agricultural and mining lands in the 1930s by the National Park Service; most of these were later transferred to state park systems.

Landscapes of this type were typically developed with facilities--roads, trails, and buildings--that gave access to scenic points of

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

interest and provided for the comfort, recreation, and enjoyment of the public. These types are more likely to contain naturalistic manmade features, such as lakes and waterfalls, intended to enhance the parks's scenic character and recreational use. These parks also contain facilities related to the park's administration. Function, recreational use, and natural character distinguish various areas of these parks. Many state parks have separate areas for day-use, overnight use, organization camps, and special kinds of recreation (e.g. golf courses or ski areas.) Entire parks based on historic boundaries or smaller areas within such parks may be listed in the National Register of Historic Places under the Historic Park Landscapes in National and State Parks multiple property group. For a list of the landscape types and physical characteristics comprising this property type, see the sections that follow for:

Park Road Systems and Parkways

Trail Systems

Entranceways

Scenic Overlooks and Pull-Offs (in conjunction with roads)

Scenic Resources and Overlooks

Waysides (parkways and recreational demonstration areas)

Day-use Areas (state parks)

Picnic Areas

Overnight Areas (state parks)

Recreational Facilities

Campgrounds

Organization Camps (state parks and recreational demonstration areas)

Civilian Conservation Corps (CCC) Camps

SUB-TYPES OF HISTORIC PARK LANDSCAPES

Park Road Systems and Parkways

This landscape type covers the motor roads making up the circulation system of a park and reflecting the principles of naturalistic park road design developed by the landscape architects and engineers of the National Park Service. It includes the major park roads designed or improved through the cooperation of the National Park Service and Bureau of Public Roads to provide entry to a park and access to the park's scenic features and recreational areas. It also includes minor roads designed by National Park Service engineers to provide circulation within park villages and other developed areas, as well as roads serving administrative purposes such as fire protection. It may include early roads constructed in parks

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

by the U.S. Corps of Army Engineers or State highway departments, which were later improved by the National Park Service. This landscape type also includes parkways designed by the National Park Service in cooperation with the Bureau of Public Roads to connect parks and other scenic areas and to provide recreational and scenic pleasure. This type may also include approach roads developed by State highway departments and the National Forest Service outside of national parks to provide a scenic approach to national park areas. In state parks, this includes roads constructed by the CCC, state highway departments, and Work Progress Administration crews.

Major roads (constructed by Bureau of Public Roads)

Systems of loop and circuit roads

Parkways

Minor roads

circulatory roads in developed areas

fire roads

truck trails

spur roads

loop development

Approach Roads

U.S. Forest Service and other government agencies

State and U.S. highways

Road Characteristics

Protection of natural features

(trees, outcrops, topography, drainage)

Clearing with minimal impact

(destruction and removal of trees, transplanting vegetation, saving duff, supervised burning, low-impact blasting to minimize scars and casting of materials)

Alignment following topography and presenting natural beauty

(curvilinear, tangents, radius curves, complex curves, transitional spirals, coordinating views and turns)

Gradient (varied, not to exceed 5%)

Cut and fill

(borrow pits and quarries to be located out-of-sight or outside of park)

Cross-sections

(crown, width of roadway, gutters, cut and fill, rounding and flattening of slopes, superelevation, sightlines)

Surfacing (local stone)

Treatment of slopes

(rounded and flattened at a ration of 3:1 or 4:1)

United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Bank-blending
Plantings
 (sodding, seeding, planting for erosion control,
 harmonization, and beautification)
 soil preparation: duff
 ground covers: grasses, wildflowers, vines
 shrubs: flowering and other shrubs
Overlooks (see section below for overlooks)
Loop developments
Grade separations (bridges, tunnels, viaducts, clover-leaf)
Wye intersections
Roadside cleanup
 (removal of dead and decaying trees, stumps, and brush for
 fire protection and beautification)
Spring developments
Structures Associated with Roads
 Bridges
 Low-water crossings
 Tunnels
 Guardrails and barriers
 Culverts and drains
 Revetments
 Curbs and sidewalks
 Gutters
 Tree-wells
 Loop structures
 Grade separations
Developed Areas and Buildings Associated with Park Roads
 Entrance stations, arches, and gates
 Ranger stations
 Caretakers residences
 Park headquarters
 Maintenance areas
 Concessionaires' developments
 Waysides (see section below for waysides)
 Picnic areas
 Campgrounds
 Comfort stations
 Gas stations
 Interpretive exhibits, such as historic cabins or mills
 Former CCC camps
Small-scale elements
 Parking areas

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Viewpoints and vistas
Steps and stairways
Trail heads
Signs (directional and interpretive)
Mileposts
Nature shrines
Water fountains and springs
Curbing and coping

Trail Systems

This landscape type covers the footpaths, hiking trails, and bridle trails that make up the circulation network of a national, state, or local park and were designed to provide visitors access to scenic vistas and natural features. These reflect the naturalistic principles of trail construction practiced by the National Park Service. They may interconnect with park roads and link park roads, park villages, museums, and other developed areas with scenic and natural features such as waterfalls, rivers, streams, springs, forests, canyons, meadows, lakes, and mountain peaks. This landscape type also includes segments of long-distance scenic trails that pass through national, state, and local parks, such as the Appalachian Trail from Maine to Georgia and the Pacific Crest Trail from Washington to California.

Foot trails
Bridle trails
Nature shrines
Signs and markers (directional and interpretive)
Shelters
Stables
Corrals
Bridges
Tunnels
Revetments
Culverts
Switchbacks
Guardrails
Steps and stairs
Signs
Benches
Overlooks
Parking areas
Viewpoints and vistas

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Springs and watering places
Comfort stations
Patrol Cabins

Major Developed Areas and Park Villages

This landscape type includes centers of park administration and visitor facilities. They were designed to provide essential commercial services, such as food and gasoline, and overnight accommodations; they often include facilities built and operated by both the government and park concessionaires. They include above and below-ground utilities, a general circulation network for pedestrian and motor traffic, and one or more clusters of park buildings and facilities. Administrative facilities, concessionaire's developments, residential areas, maintenance areas, and campgrounds may be combined to form a single park village or they may be separated by function and location to form specialized developments. The term "Major Developed Area" was used in the master plans for national parks. For state parks, see "Day-Use Areas" and "Overnight Areas."

Plazas (parking)
Sidewalks, paths, curbs, stairways, guardrails
Roads and bridges
Water fountains
Administration buildings
Museums (also includes amphitheaters, gardens, and nature trails)
Park staff housing (houses and dormitories)
Concessionaire's housing
Lodges and cabins
Campground (also includes amphitheaters)
Community buildings
Stores
Cafeterias
Gas stations
Water towers
Pumphouses
Power plants
Parking areas
Curbs, sidewalks, and paths
Signs
Steps and stairs
Trees, shrubs, ground covers, and foundation plantings
Stables
Water supply

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Utility systems

- telephone
- sewer
- incinerators
- electricity

Industrial groups and maintenance camps

- dormitories
- mess halls
- garages
- shops (blacksmithing, metal work, woodworking, and other)
- storage buildings and sheds
- work yards
- roads and parking areas

Minor Developed Areas

This landscape type covers outlying areas of a park that were developed to serve one or a small number of purposes, such as maintaining a park entrance, protecting the park against fire, or managing a remote area of the park. The term "Minor Developed Area" was used in the master plans for national parks to indicate the development of facilities such as entrance stations, ranger stations, campgrounds, fire lookouts, and waysides. In state parks, these areas were likely to be named for their function (e.g. "entrance station," "campground," or "ski area"); they may also have been combined with other facilities to form a day-use area.

Entrance gates and stations

- Ranger stations
- Fire lookouts and caches
- Museums (including amphitheaters, gardens, and interpretive trails)
- Patrol cabins
- Trail shelters
- Campgrounds
- Picnic areas/waysides
- Spring developments
- Developed intersections
- Scenic features (viewpoints and vistas)
- Water supply
- Recreational areas
 - ski slopes
 - toboggan runs
 - skating rinks
 - beaches

United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

swimming pools
playing fields
docks and piers
trails
Waterfalls
Fish hatcheries
Nurseries
Stables
Curbs, sidewalks, and paths
Trees, shrubs, and ground covers
Utility systems
 water
 sewer
 telephone
 electricity

Designated Natural Areas (national parks and monuments)

This landscape type includes significant land forms, topographic features, areas of native vegetation, and other natural resources within a national park or monument that were to be conserved and remain in a primitive, undeveloped condition. These include 1) wilderness areas, which applied to all areas not traversed by public roads or designated for development on the park's master plan; 2) sacred areas, which were specific zones or natural features that were to remain unimpaired; and 3) research areas, which were reserved for scientific study. Historic wilderness areas should not be confused with the legislated wilderness areas on public lands subsequent to the enactment of the Wilderness Act of 1964.

Wilderness areas

trails
shelters
fire lookouts and caches
truck trails
 patrol cabins
Sacred Areas
Research Areas

Day-use Areas (state parks)

This landscape type covers the administrative, commercial, and recreational center of a state park, country park, or recreational demonstration area. This area was generally separated from the overnight area having campgrounds and overnight cabins.

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Roads, paths, and parking areas
Picnic areas
 shelters
 comfort stations
 water fountains
 community kitchens
Refectories and concession buildings
Water towers
Custodian's residences
Pumphouses or springhouses
Bathhouses
Boathouses
Dams
Lakes or ponds
Recreational facilities
Spring developments
Museums
Observation towers and lookouts
Water supply
Utilities
Bridges
Trails and stairways
Parking areas
Overlooks
Trees, shrubs, and ground covers
Signs

Overnight Areas (state parks)

This landscape type covers the areas of state parks, country parks, and recreational demonstration areas developed to provide accommodations in the form of campgrounds, cabin groups, and lodges. This area was separated geographically from the day-use area but was connected to it by motor roads, footpaths, bridle trails, and, sometimes, a lake or river.

Roads, paths, and parking
Campgrounds
Comfort stations
Community kitchens
Water fountains
Water towers
Check-in stations
Pumphouses

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Organization camps
Cabin courts
Lodges
Beaches
Docks
Trails and paths
Playing fields
Water supply
Utilities
Overlooks

Recreational Facilities

This landscape type includes specialized facilities developed for outdoor recreation in state and country parks. These may be found in combination with day-use and overnight areas. They frequently include parking, paths and trails, minor roads, plantings, water fountains, walls, shelters, overlooks, and associated buildings.

Lakes, ponds or other water features

dams
channels
beaches
bathhouses
boat houses
boat launches
spring developments
parking areas
fishing and boating docks
ice skating shelter
picnic shelters
overlooks

Winter sports and ski areas

ski slopes and trails
ski jumps
ski lifts
toboggan runs
parking areas
skating rinks
ski lodge

Playing fields

Swimming pools and bathhouses
Golf courses
holes

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

fairways
caddy houses
club houses
ponds
vegetation
Tennis courts
Trails (foot and bridle)
Stables and corrals

Scenic Overlooks and Pull-offs (along park roads)

This landscape type covers scenic overlooks and pull-offs developed along major park roads and parkways for the purpose of providing 1) viewpoints from which visitors could enjoy scenic views, or 2) access to nearby scenic resources, such as waterfalls, rock outcroppings, and springs. The landscape type includes overlooks developed on natural points of land and those constructed from fill as naturalistic terraces. Some overlooks and pull-offs are equipped with water fountains, comfort stations, and interpretive exhibits. Overlooks may contain paths leading to other viewpoints, scenic resources, trails, or comfort stations.

Roads and parking areas
Curbs, sidewalks, retaining walls, and guardrails
Grading and bank sloping
Viewpoints and vistas
Scenic resources
Trails and paths
Steps and stairways
Bridges
Shelters
Observation towers/lookouts
Signs and exhibits (interpretive and directional)
Memorials (e.g. Stephen Mather memorial)
Trail markers
Water fountains and supply
Spring developments
Comfort stations
Picnic sites
Trees, shrubs, ground covers, and foundation plantings
Benches

Scenic Resources and Overlooks

This landscape type covers 1) scenic resources, such as waterfalls,

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

lakes, promontories, springs, and mountain peaks, that have been developed with minor roads, parking areas, trails, paths, bridges, benches, and other facilities for public use and enjoyment, and 2) overlooks that have been similarly developed along trails or minor roads for the purpose of presenting scenic views to visitors.

Paths and trails
Steps and stairways
Guardrails
Terraces
Bridges
Shelters
Signs and exhibits (interpretive)
Spring developments
Viewpoints and vistas
Benches
Parking areas
Comfort Stations
Water fountains
Trees, shrubs, ground covers, and foundation plantings

Entranceways

This landscape type covers the area where motor traffic along state highways and other roads entered the park. Typically the park entrance was marked by a sign, a gate, and/or a check-in station where entrance fees were collected and visitor information provided; park roads began at these points. These areas were often equipped with interpretive exhibits, water fountains, and comfort stations. In national parks these were classified as a minor developed area.

Roads
Arches, gates, and walls
Check-in stations
Ranger stations
Parking areas
Curbs and sidewalks
Paths and trails
Water fountains
Comfort stations
Trees, shrubs, ground covers, and foundation plantings
Flagpoles
Signs
Water Supply

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Utilities

Waysides (parkways and recreational demonstration areas)

This landscape type covers the recreational wayside developed in the 1930s for picnicking and simple recreational activities in conjunction with motor touring. Waysides were developed along parkways developed by the National Park Service and along approach roads and scenic highways outside parks. Several were constructed as recreational demonstration areas in South Carolina and Virginia.

Roads and parking areas
Curbs, steps, stairs, and sidewalks
Picnic areas
Concessionaire: stores and gas stations
Comfort stations
Picnic shelters
Water fountains
Trails
Playing fields
Caretaker's residences
Nature gardens
Picnic tables
Fireplaces
Trees, shrubs, and ground covers
Signs
Water supply
Utilities

Campgrounds

This landscape type covers campgrounds in national, state, and local parks developed according to the principles of campground planning and reconstruction formulated by E.P. Meinecke and practiced by the National Park Service designers.

Entrance gates
Entrance stations
Road system (one-way loop with tiers)
Parking spurs
Barriers
Tent sites
Fireplaces
Picnic tables
Water fountains

United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Water towers and pumphouses
Shelters
Trash receptacles
Paths and trails
Steps and stairs
Trees and shrubs
Signs
Community kitchens
Comfort stations
Amphitheaters or campfire circles
Stores
Viewpoints and vistas
Lakes, ponds, canals, or other bodies of water
Water supply
Utilities

Picnic Areas

This landscape type covers picnicking grounds in national, state, and local parks. These were typically developed according to the principles of campground planning and reconstruction formulated by E. P. Meinecke and practiced by the National Park Service designers. They were also an important feature of a wayside.

Road system
Parking areas
Barriers
Paths
Picnic sites
Fireplaces
Picnic tables
Water fountains
Water towers and pumphouses
Trash receptacles
Trails
Steps and stairs
Signs
Shelters
Community kitchens
Comfort stations
Pumphouses
Water system
Viewpoints and vistas
Lakes, ponds, streams, or other bodies of water

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

Overlooks
Recreational areas
Water supply
Utilities

Organization Camps (state parks and recreational demonstration areas)
This landscape type covers the overnight camps set aside for use by private and semi-private social, educational, and welfare organizations in recreational demonstration areas and state parks. These areas were self-sufficient clusters that were geographically and visually separated from other park facilities and operated independently. Each camp was divided into an administrative center and small outlying units which housed campers. A park might have several separate organization camps in outlying areas, for example, on opposite shores of a lake.

Administration buildings/offices
Recreation halls
Dining halls
Infirmaries
Staff quarters
Craft shops
Nature buildings
Water towers
Wash houses and laundries
Comfort stations and latrines
Counselor cabins
Camper cabins
Unit lodges
Paths and Trails
Campfire circles
Council rings
Roads and parking areas
Lakes, ponds, or other bodies of water
Dams
Beaches
Docks
Playing fields
Water supply
Utilities

Civilian Conservation Corps (CCC) Camps
This landscape type covers the camps built to house the CCC in

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

national and state parks. The canvas platform tents that accommodated the first CCC camps were quickly replaced by army-style barracks arranged in an orderly fashion. The buildings could be assembled quickly on site where needed and easily dismantled and moved to a new site once the camp's work was completed. Because of their temporary nature, few of the buildings associated with these camps remain intact. Many are identifiable only by the landscape improvements, such as planting or irrigation, made by the CCC enrollees during their occupation.

- Entry roads
- Parade grounds
- Flagpoles
- Headquarters buildings
- Dining halls (mess hall)
- Dormitories and barracks
- Chapels
- Workshops (woodworking, metal work, blacksmithing, etc.)
- Sheds
- Sawmills
- Educational buildings
- Recreational buildings
- Garages
- Oil houses
- Shower houses
- Plantings
- Paths
- Water supply
- Utilities

REGISTRATION REQUIREMENTS

A park landscape meeting the requirements listed below may be listed in the National Register of Historic Places. Entire parks based on their historic boundaries or any combination of park landscape sub-types within a park may be listed as a historic district. A single resource within a landscape--such as a picnic shelter, bridge, lookout, or water fountain--may be listed individually as a building, structure, site, or object, if it is significant for its landscape or architectural characteristics under Criterion C and the historic landscape to which it was historically associated no longer possesses historic integrity. A building or structure possessing particular importance for its role or design may also be listed individually, for example, a museum important in the educational and

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

interpretive program of a park, a fire lookout reflecting a particular design, and an arched rock-faced concrete bridge having a high degree of workmanship. All properties eligible under the multiple property listing, Historic Park Landscapes in National and State Parks, will date to a period of significance that includes all or a portion of the New Deal era, 1933-1942. Many will also include significant park landscapes and resources that predate the New Deal and relate to the origins and early development of these parks prior to 1933, this includes local parks that became state parks and state parks that have become national parks. Landscapes or resources predating the establishment of parks and not possessing the qualities of park landscape design and architecture may be eligible for listing and should be evaluated under other appropriate themes and historic contexts, for example, frontier settlement, ranching, or agriculture.

Ideally, it is desirable to identify and register the largest unit having significance and integrity as a historic park landscape, for example, an entire state park, a park village, a complex of a lodge and cabins, a trail or road, or an artificial lake with a dam, bathhouse, boathouse, and beach. The coordinated development for parks during the historic period through a comprehensive planning process and the development of master plans provides a strong argument for this approach.

Realistically, however, preservation planning and compliance activities may make it necessary to nominate for individual listing and to consider the eligibility of smaller elements within a landscape. Many of the structural features of parks--stairways, overlooks, comfort stations, culverts, dams, springhouses--were unique or one of a small finite group of similarly designed and constructed features. They were designed for their location, and in many cases, a specific building site, and they resulted from intense workmanship and labor and adhered to a set of naturalistic principles of design and construction rather than standardized models or plans. Many are in remote or isolated places, accessible only by trails and footpaths. Cumulatively they represent the rich and manifold legacy of the New Deal programs to public recreation, social welfare, and conservation. Individually each represents some aspect of the diverse artistry, craftsmanship, structural types, and methods of construction of a program of construction suited to the climate, natural topography, available natural materials, and cultural traditions of each park's locality or region. This program resulted from the National Park Service's supervision of such programs as the CCC, WPA, FERA, and PWA and a wealth and abundance of creative talent and energy nationwide by architects, landscape architects, and engineers. Because of the highly individual nature of these features, their finite number, their reflection of a national style of landscape and architectural design, and the high quality of artistic design and workmanship, many are individually eligible. Not

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

eligible by themselves are single examples of redundant features such as ordinary culvert headwalls, retaining walls, and guardrails along park roads or trails (these however may contribute to a district based on the entire road or road system, a scenic trail, or a developed area).

The outstanding significance of the programs with which these features are associated and the tremendous importance of these resources to the localities and states to which this legacy was entrusted and to the American public as a whole make a strong argument for the eligibility collectively and individually of associated features. The construction of these features affected the lives of those who created them and those who benefitted from their use. These programs--intended to provide economic relief and training--altered the course of history in recreation, conservation, social history, and economics. They left a rich legacy characterized by individuality, creativity, and diversity that can never be replicated.

Properties eligible for listing in the National Register of Historic Places as members of the multiple property group, Historic Park Landscapes in National and State Parks, meet Criteria A and/or C in any of the following areas: Landscape Architecture, Architecture, Community Planning and Development (park), Conservation, Engineering, Politics/Government, Entertainment/Recreation, and/or Social History. Properties must:

- 1.) be associated with the 20th century movement to develop national parks for public enjoyment, to conserve natural features and scenic areas as public parks, to organize statewide systems of state or local parks, or to develop natural areas, including sub-marginal lands, for public recreational use.
- 2.) retain several or all of the physical characteristics listed above that were developed for that area during or before the New Deal era (1933-1942).
- 3.) reflect the following principles and practices of park landscape design developed and used by the National Park Service in national parks from 1916 to 1942 and in state and national parks through ECW, CCC, PWA or WPA projects from 1933 to 1942.
 - o Protection and preservation of natural scenery and features
 - o Prohibition of exotic plants and wildlife
 - o Presentation of scenic vistas through the location of park facilities and development of overlooks
 - o Avoidance of right angles and straight lines in the design of roads, trails, and structures

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section F

- o Use of native materials for construction and planting
- o Use of naturalistic techniques in planting, rockwork, and logwork to harmonize manmade development with natural surroundings
- o Adaptation of indigenous or frontier methods of construction
- o Transplanting and planting of native trees, shrubs, and ground covers to erase the scars of construction and earlier uses of the land

4.) possess historic integrity of location, setting, design, materials, workmanship, feeling, and association, and overall reflect the physical appearance and condition of the landscape during the period of significance. Changes and additions to the landscape since the period of significance, including new campgrounds, buildings, trails, roads, lakes, and recreational areas, diminish historic integrity and are considered noncontributing. Historic park landscapes containing such changes are eligible for listing despite these changes if the overall historic plan is intact and a substantial number of historic characteristics possessing integrity of design, location, materials, and workmanship are present.

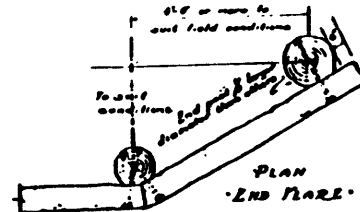
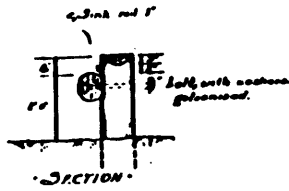
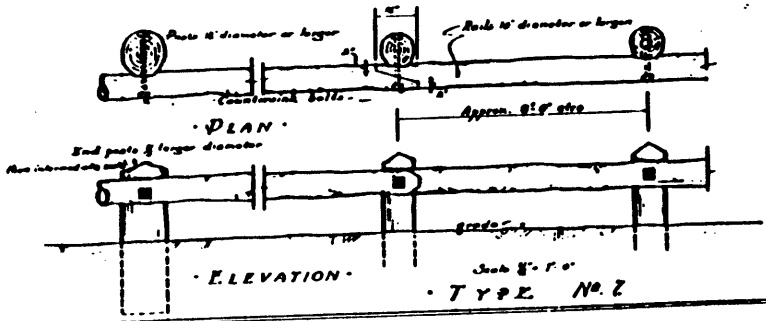
Local parks, including metropolitan and county parks, may also qualify for listing under this context if they possess naturalistic characteristics and natural components, and if they were partially or entirely developed under the direction of the National Park Service through the CCC or WPA.

Park landscapes having national significance under this multiple property listing are those pivotal in introducing and advancing the principles and practices of national park landscape design and those maintaining a high degree of artistic quality and historic integrity. Such properties should be considered for designation as National Historic Landmarks under the themes, Transforming the Environment, Expressing Cultural Values, and Developing the American Economy.

G. Geographical Data

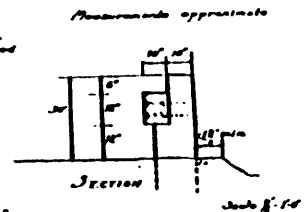
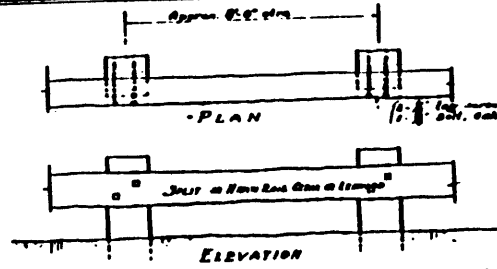
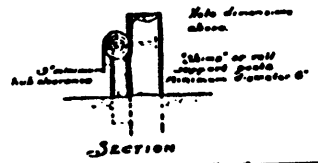
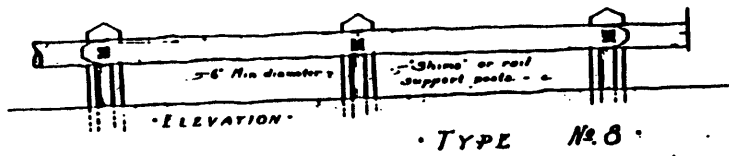
This context applies to national, state, and local parks within the United States of America and its territories.

Standard Architectural Details for WOOD GUARDRAIL TYPES--
National Park Road Projects issued December 1929)

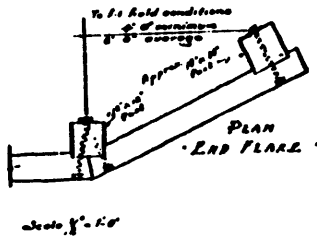
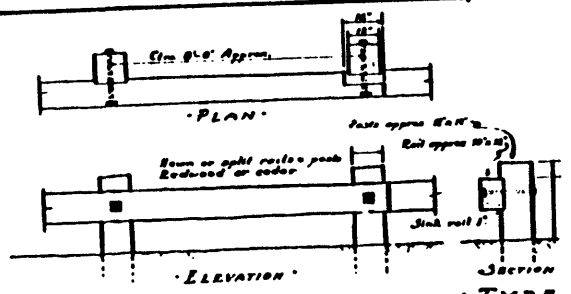


Note: All hardware to be galvanized. Depth of posts to ground to be as required in field conditions.
All scales 1/2" = 1'-0"

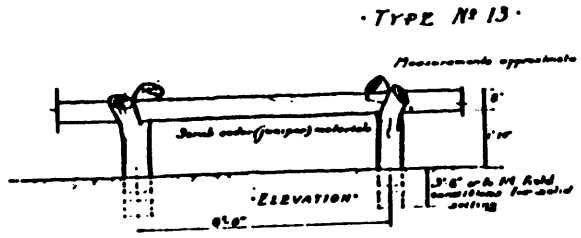
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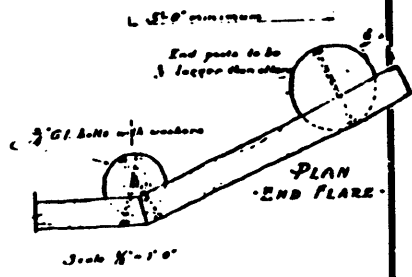
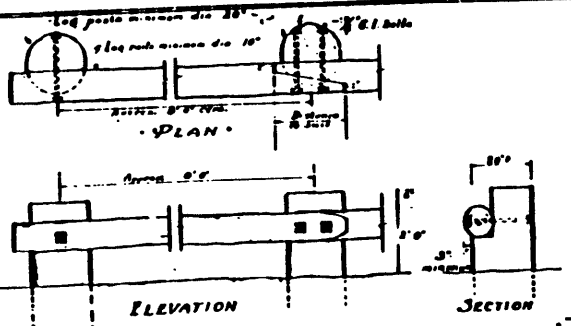
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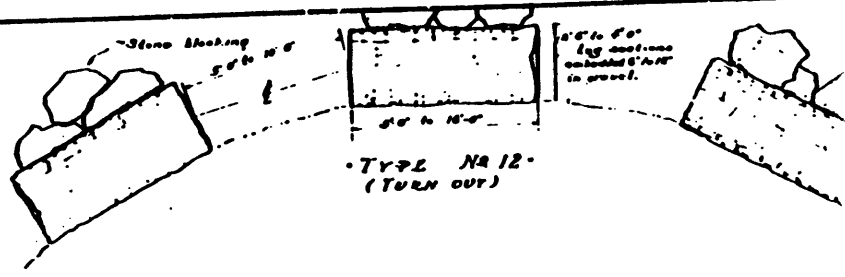
TYPE No. 9



TYPE No. 13



TYPE No. 10



TYPE No. 12 (TURN OUT)

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

H. Summary of Identification and Evaluation Methods

This multiple property documentation form was developed by the National Register of Historic Places, Interagency Resources Division, National Park Service, primarily to encourage the nomination of the historic park landscapes of national and state parks to the National Register of Historic Places. It is part of a larger study, *Presenting Nature: The Historic Landscape Design of the National Park Service, 1916 to 1942*, by Linda Flint McClelland, historian, National Register of Historic Places, which was published by the National Park Service in 1993. It was developed according to the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation and guidelines developed by the National Register of Historic Places for documenting and registering multiple property groups. The initial funding for the study came from a grant from the Horace Albright (now Albright-Wirth) Employee Development Fund of the National Park Foundation, a non-profit organization devoted to supporting National Park Service employees and initiatives. The Interagency Resources Division of the National Park Service, supported and funded the project's completion.

The idea for the study came from the growing interest in landscape preservation and the concern that, while significant park buildings and structures were being recognized, the larger landscapes of which they were an integral part were being overlooked. The objective was to develop a national context for identifying, evaluating, and registering the vast number of historic park landscapes--roads, trails, scenic overlooks, campgrounds, park villages, and entire parks--influenced by the design ethic developed and practiced by the National Park Service. The largest group of these are areas of national, state, and local parks developed by the CCC under the direction of landscape architects, architects, and engineers of the National Park Service in the 1930s. One major goal was to consolidate information from the increasing number of state and national park nominations into a single nation-wide context that state preservation programs, state and national park agencies, and others could use to nominate significant park landscapes. This national context is intended to assist national, state, and local park agencies in developing historic contexts for their jurisdictions relating to conservation, park development, recreation, landscape architecture, architecture, and engineering. By consolidating the information relating to the national context, this form eliminates the need to reestablish the chronology of events, the physical and associative characteristics, and historical importance of park landscapes in subsequent, separate reports and nominations. As a result this information will streamline the documentation of historic contexts for National Register nominations,

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

historic resource studies, and cultural landscape reports.

The form is written from the perspective of landscape architecture, the profession having primary responsibility for the physical development of the parks from 1916 to 1942. Just after the turn of the century, prominent landscape architects proclaimed their stewardship of significant natural areas, set forth naturalistic theories for park development, and strongly advocated the founding of the National Park Service. The National Park Service hired landscape engineers and landscape architects beginning in 1918 to advise superintendents on the physical development of the parks in keeping with the dual mission of the National Park Service to make the parks accessible to the public and to preserve them unimpaired for future generations. The landscape engineers developed landscape standards for the construction of park roads, which included the design of guardrails, bridges, culverts, and road banks and the protection of natural features and scenery during construction. In the late 1920s, the Western Field Office was established and the Landscape Division assumed a leading role in the development of Park Development Outlines and General Development Plans, later called master plans, for each park. Through these documents, the development related to various park needs, functions, and programs was coordinated. The process, principles, and practices developed by this office in the late 1920s were refined and expanded in the 1930s when park development took place at an unprecedented pace due to New Deal programs including the Emergency Conservation Work (later called the Civilian Conservation Corps), Public Works Administration, and Works Progress Administration. During the period 1933 to 1942, the National Park Service influenced the design and development of state parks and state park systems through State Park Emergency Conservation Work, the development of recreational demonstration areas, and the coordination of a nation-wide survey of parks, parkways, and recreational areas.

Search of Secondary Literature

The first step in conducting this study was an extensive search of secondary literature and synthesis of information pertaining to the history of the National Park Service, park building and naturalistic landscape gardening in the United States, rustic architectural design, the state park movement, and the Civilian Conservation Corps and other programs of the New Deal. These sources included books, journal articles, oral histories, and National Register nominations for resources in state and national parks. Particularly valuable in this step were multiple property submissions for Crater Lake, Glacier, Mount Rainier, Rocky Mountain, and Zion national parks and state parks in Iowa, Minnesota, Pennsylvania, and Tennessee; an administrative history on the Civilian Conservation Corps in the National

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

Park Service; studies on rustic park architecture, and a master's thesis on the architecture of Texas state parks; and a number of legislative and administrative histories, biographies, and commentaries on the history of the National Park Service. Scholarship on urban parks and park designers, such as Jens Jensen and Frederick Law Olmsted, Sr., provided additional insight into the professional ideas and practices that guided national and state park designers.¹

Research Questions

After secondary sources were consulted, gaps in the body of information on the topic were identified and a set of research questions were formulated to guide research of primary sources.

- o What important events and ideas in the history of the landscape design in the United States influenced the design and development of national and state parks. What were the landscape design principles and practices that linked national and state park design in the twentieth century with the English gardening tradition, writings of Andrew Jackson Downing, and work of Frederick Law Olmsted, Sr., in the nineteenth century? How were these ideas transmitted from generation to generation of landscape designers? How did they change? What were the prototypes for natural park design? How was the naturalistic tradition in park building perpetuated in the twentieth century?
- o What were the roots of the rustic architectural tradition in the United States? How did American styles and regional and indigenous forms influence the character of park structures. What were the important prototypes and developments in this traditions? Who were the major practitioners?
- o How did the traditions of rustic architecture and naturalisticgardening coalesce in the Arts and Crafts movement and how were they carried over into the work of national and state park designers. What was the role of Henry Hubbard, Frank Waugh, and others?
- o What was the relationship between the profession of landscape architecture and the national parks?
- o What was the state of the art for building park roads, trails,

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

overlooks, and other structures in the 1910s? What kinds of development were considered necessary or desirable for making the national parks accessible for public use, enjoyment, and appreciation?

- o What activities characterized the work of the first landscape engineers of the National Park Service? What was their relationship to park superintendents, park service officials, and concessionaire? What changes did they make in the physical character of the national parks? What parks and what areas within parks were given special consideration? What purposes, principles, and influences guided their work?
- o How did park planning, road-building, trail construction, road-side cleanup, museum development, campground development, and landscape naturalization evolve in the 1920s? What was the role of the landscape architects? What improvements were made in these aspects of park development during the 1920s? What were the national park areas and facilities where new ideas were tried and advances introduced? How did the landscape architects interact with other programs such as education, forestry, and engineering?
- o What role was given the landscape architects in the cooperative agreement with the Bureau of Public Roads? What were their responsibilities in the road and trail-building programs? In what ways did they advance the state of the art for road-building? What techniques did they develop for stonemasonry, bridge construction, treatment of slopes that contributed to the evolution of a National Park Service style? What were the standards developed by the Landscape Division in the 1920s and 1930s?
- o What was the process through which areas of parks were developed and facilities constructed in the national parks? What events led to the development of master plans for every park? How did the planning process work? What was its purpose? How did the master plans serve the massive expansion of park facilities in the 1930s?
- o How did the various federal programs and activities of the New Deal affect the operations of the National Park Service and the physical character of the parks? What was the role of landscape

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

architects in these changes? How was the service able to adapt the process, principles, and practices of park design established in the late 1920s for new purposes.

- o What was the relationship between the National Park Service and state and local park systems? To what extent did they interact and influence each other before and during the New Deal period?
- o What was the role of the National Park Service in the emergency conservation work in state parks undertaken by the Civilian Conservation Corps? How were the principles and practices for park planning and design developed by the National Park Service carried over into state park work? What advances were made during the 1930s through state park conservation work?

The research questions spanned a considerable period of time, extending backward to the roots of the naturalistic or rustic tradition in Andrew Jackson Downing's writings and forward to the work of the Civilian Conservation Corps during the New Deal. The study became a search for the prototypes, principles, policies, practitioners, and practices that guided park designers of natural areas and led to a cohesive style of park landscape architecture associated with the National Park Service in the 1920s and 1930s. It also became a search for examples of landscapes in state and national parks that exemplified these principles and practices and were pivotal or influential in the history of park landscape design.

Search of Primary Sources

Primary sources consulted during the study included historic correspondence, reports, and other records of the National Park Service; annual reports of the Director of the National Park Service and the Secretary of the Interior; proceedings of national park conferences; master plans of national parks; historic photographs documenting national and state parks; historic treatises, textbooks, and journals in landscape architecture; and narrative reports, correspondence, drawings, site plans, and portfolios related to the work of the Landscape Division and the Civilian Conservation Corps. The main repositories of these records were the National Archives, Washington, D.C., Alexandria Virginia, and San Bruno, California; Technical Information Center, Denver Service Center, National Park Service; National Park Service Historic Photography Collection, Harpers Ferry, West Virginia; Natural Resources Library, U.S. Department of the Interior, Washington, D.C.; Agricultural Research Library, U.S. Department of Agriculture, Beltsville, Maryland; Frederick

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

Law Olmsted National Historic Site, Brookline, Massachusetts; Resource Center, American Society of Landscape Architects, Washington, D.C.; Horticultural Library, Smithsonian Institution, Washington, D.C.; Research Library, National Arboretum, U.S. Department of Agriculture, Washington, D.C.; Park Library, Mount Rainier National Park, Longmire, Washington; Park Library and Archives, Big Bend National Park, Texas; Park Archives, Carlsbad Caverns National Park, New Mexico; Park Library, Yosemite National Park, California; University Archives, University of Massachusetts, Amherst, Massachusetts; University Library, Sul Ross University, Alpine, Texas.

The following activities provided information particularly relevant to this study. A search of landscape textbooks and treatises by Andrew Jackson Downing, Humphry Repton, William Robinson, Samuel Parsons, Jr., Henry Hubbard, Frank Waugh, Wilhelm Miller, and O.C. Simonds were examined to identify the basic principles and practices of naturalistic design advocated and followed by the landscape architecture profession. This research also identified landscape features in Central Park and Franklin Park that became prototypes for the design of natural parks and revealed statements supporting the profession's claim of stewardship of natural areas. Early conference proceedings and historic photographs revealed the state of the art of road-building and trail construction in national parks and revealed the importance of the Bear Mountain area of the Palisades Interstate Park, New York, as a model for recreational development. The annual reports of the Secretary of the Interior and the Director of the National Park Service from 1917 to 1943 provided a chronology of the events, policies, personalities, and projects that contributed to the history of landscape design in the National Park Service. The written records of the Western Field Division, now in Record Group 79 of the National Archives, in Washington, D.C. and San Bruno, California, yielded the standards and specifications developed by the Western Field Office in the late 1920s, and information about the events and circumstances surrounding their development and use. Copies of historic drawings and site plans for individual projects and standard designs for guardrails and culverts in the national parks were obtained from the Technical Information Center of the National Park Service's Denver Service Center and identified through the center's computerized index. Master plans for national parks dating from 1931 to 1942 were located in the Cartographic Branch of the National Archives, Alexandria, Virginia. Historic photographs depicting the work of the Western Field Office were found in the National Park Service Historic Photography Collection in Harper's Ferry, West Virginia; at the park library at Mount Rainier and the collections of the Pacific Northwest Regional Office, Seattle, Washington; and among the narrative reports of the Landscape Division and Branch of Plans and Design, Records

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

of the National Park Service, Record Group 79, National Archives, Washington, D.C. Master plans for the following parks were examined and studied to determine the nature of these plans, their intent, and use, and to trace the course of development in several parks: Acadia National Park, Mount Rainier National Park, Shenandoah National Park, Yellowstone National Park, and Yosemite National Park. Reports and photographs pertaining to the CCC work in national and state parks were located in Record Group 79, Records of the National Park Service, National Archives, Washington, D.C.; these provided a wealth of information about the conservation work done by the CCC under the direction of the National Park Service. The volumes and portfolios on park and recreation structures published by the National Park Service in 1934, 1935, and 1938 provided numerous examples for study and an index of the principles and practices that had been formulated by the National Park Service through the work of the Landscape Division and the Emergency Conservation work in state and national parks.² The plans and drawings contained in these volumes and the historical records pertaining to these publications (Cartographic Branch, National Archives, Alexandria, Virginia) provided a wealth of graphic information on the topic and was visual evidence of the diffusion of ideas that occurred among state, local, and national parks during the 1930s.

Field Study

Field work was an important aspect of the design of this study. Historic maps, aerial views, drawings and plans, and narrative reports were consulted before and after site visits to guide the identification and analysis of historic features. Where National Register documentation or other secondary sources were available they were consulted. The purpose of field work was to test and determine inventory techniques suitable for park landscapes and to determine the condition of special types of features, the changes likely to occur since the period of significance, and the integrity of representative park landscapes. During the course of this study, the author visited the following national, state, and local parks: Acadia National Park; Big Bend National Park (formerly Big Bend State Park, Texas); Blue Ridge Parkway; Carlsbad Caverns National Park; Great Smoky Mountains National Park; Shenandoah National Park; Mount Rainier National Park; Olympic National Park; Bear Mountain State Park (Palisades Interstate Park), New York; Blue Hills Reservation, Massachusetts; Davis Mountains State Park and Balmorhea State Park, Texas; Catoctin Mountain Park (formerly Catoctin Recreational Demonstration Area), Maryland; Prince William Forest (formerly Chopawamsic Recreational Demonstration Area), Virginia; Cunningham Falls State Park (formerly Catoctin Recreational Demonstration Area), Maryland; Camden Hills State Park, Maine; French Creek

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

State Park (formerly a recreational demonstration area), Pennsylvania; Ludington State Park, Michigan; Virginia Kendall Park (now in Cuyahoga Valley National Recreation Area), Akron, Ohio; Deception Pass State Park and Rainbow Falls State Park, Washington. In several parks, the author consulted with park superintendents, landscape architects, librarians, planners, rangers, and cultural resource managers. The author became acquainted with other parks through a study of master plans, illustrated narrative reports of the 1930s, historic photographs, and National Register nominations these included Yosemite National Park; Yellowstone National Park; Palmetto State Park, Texas; Bastrop State Park, Texas; Palo Duro State Park, Texas; Gooseberry Falls State Park, Minnesota; and Douthat State Park, Virginia. Notes, observations, and photographs made during previous visits to the following parks were also useful: Crater Lake National Park, Grand Canyon National Park, Casa Grande National Monument, and Saguaro National Monument.

Case Studies

Four national parks were given special emphasis as case studies: Mount Rainier, Yosemite, Shenandoah, and Big Bend. These parks were selected for special study because of the role they played in the development of the policies, principles, process, or practices that characterized the history of landscape design in the National Park Service as a whole.

Mount Rainier was selected because of its manageable scale for study (Yellowstone and Yosemite were too complex and large) and the important role that the development of Yakima Park played in the development of the process of master planning. At Mount Rainier, many advances in protecting the landscape during road construction were introduced and the program of landscape naturalization got started.

Yosemite Valley was in 1916 and continues to be the park service's most vexing problem in park development. Early plans moved park facilities away from the Merced River to a site screened by trees against the sheer granite cliffs of the valley. It was Yosemite that inspired Henry Hubbard, landscape architecture's foremost theoretician in the 20th century to write on the stewardship of the landscape architecture profession for America's natural places, and it was Yosemite where the influence of Frederick Law Olmsted, Jr., as a member of the park's committee of expert advisers, was most strongly felt. Because the park's landscape history is complex, this study covers only those aspects that appear to have influenced or to be particularly representative of the development of national park design in general, such as early landscape studies, meadow preservation, naturalization of park roads, and village beautification.

Shenandoah was selected because it was one of the first parks to be

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

developed by the Eastern Office of the Western Field Office and is a link with the recreational and parkway development that occurred later in the 1930s along the Blue Ridge Parkway. The story of Shenandoah's transformation from exhausted upland farms to a natural reserve beholding the majesty of the Blue Ridge through the work of the CCC is well-known. Shenandoah, along with Acadia, provide enduring evidence of the early work of the Eastern office of the Landscape Division, founded in 1930 at Yorktown.

Big Bend was selected because it entered the National Park Service in 1943, after having been developed as a Texas state park through the efforts of the Civilian Conservation Corps. Big Bend offered the opportunity to study the changing direction of park planning and policy at the close of the New Deal. It was one of the first parks to receive serious planning and construction at end of World War II. For this reason it provided an opportunity to view the transition of rustic landscape design into the Mission 66 period.

To determine the way the state park ECW program operated, the study focussed on District II, later Region 7, headed by Herbert Maier, and several state parks in Texas, including Big Bend, Bastrop, Davis Mountains, Palo Duro, and Palmetto State Parks. State and local parks in other geographical regions were examined for comparison: Deception Pass State Park in Washington, Ludington State Park in Michigan, Gooseberry Falls State Park in Minnesota, and Virginia Kendall Park near Akron, Ohio. Narrative reports, inspector's reports, historic photographs, master plans, newsclippings, and correspondence in Record Group 79, National Archives, were examined for this purpose.

Historic Context and Property Types

The historic context was organized chronologically in three time periods: the period before 1916 covers the roots of park design and the influences preceding the legislation to establish the National Park Service; the period, 1916 to 1933, covers the formative years when the landscape program and the landscape principles and practices of the National Park Service; the period, 1933 to 1942, covers the New Deal era when a variety of federal programs carried out by the National Park Service fostered the expansion and development of national, state, and local parks. The property type analysis was based on the organization and component features of landscape areas in national parks, state parks, and recreational demonstration areas. These are based primarily on function. This section lists the physical and associative characteristics of park landscapes. The requirements for integrity have been based on a knowledge of the condition and integrity of a number of representative national,

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

state, and local parks, and an assessment of the types of changes that have likely occurred given the nature, age, and use of the resources. For example, CCC camps are less likely to have survived intact than park villages, which may possess historic buildings but not historic curbing and paths. Organization camps are likely to have survived intact with little modification. The registration requirements are loosely structured given the recognition that conditions will vary from state to state and locality to locality depending on maintenance, climate, use, and degree to which structures and other features have been renovated or replaced.

Findings and Their Use

An understanding of the landscape design of the National Park Service provides a basis for evaluating the historic significance of park landscapes in national, state, and, in some cases, local parks. These areas are cultural and natural landscapes containing roads, trails, overlooks, bridges, buildings, parking areas, vistas, plantings, and small elements such as signs and water fountains. Because these places reflect the manifold contributions of several generations of creative park designers who were committed to the use and preservation of parks, many of these areas are eligible for listing in the National Register of Historic Places. This documentation form can be used by park agencies at various levels of government, state preservation offices, local governments, and others to facilitate the National Register listing of parks and park landscapes associated with the context. Our intention is to eliminate the duplicative efforts that result when each park agency and state historic preservation office sets out to evaluate and register properties sharing the same historic context and characteristics.

By defining and describing the characteristics of park landscapes, the documentation form is also intended as a guide to identifying the component resources that were part of the legacy of the National Park Service designers from 1917 to 1942. As a result, the study should be useful to those surveying the cultural resources of national, state, and local parks; those compiling the List of Classified Structures (LCS) and Cultural Landscape Inventory (CLI); and those preparing National Register forms.

We hope that this study will encourage further scholarship on the landscape design of national, state, and local parks. The research methods used herein can be applied to studies of individual parks. The text, footnotes, and bibliography are intended to help researchers find and interpret primary sources, such as master plans, development outlines, historic photographs, plans and drawings, narrative reports of CCC camp superintendents and district inspectors, and reports of the resident landscape architects. These historic documents provide a wealth of

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section H

detailed, interesting, and relevant information. The study also draws attention to some of the valuable finding aids available to the researcher. Foremost among these are the computerized index and microfilmed files of historic drawings and plans maintained by the Technical Information Center of the Denver Service Center.

Endnotes

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National Park Service

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National Park Service

National Register of Historic Places
Continuation Sheet

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National Register of Historic Places
Continuation Sheet

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National Park Service

National Register of Historic Places
Continuation Sheet

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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

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United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

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Section I

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United States Department of the Interior
National Park Service

**National Register of Historic Places
Continuation Sheet**

HISTORIC PARK LANDSCAPES IN NATIONAL AND STATE PARKS

Section I

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