RANCHO LAS FLORES ADOBE NATIONAL HISTORIC LANDMARK

INTERPRETIVE PLAN

prepared for
MARINE CORPS BASE CAMP PENDLETON

and the
OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION, SACRAMENTO, CA

by the
THE SCHOOL OF ENGINEERING
UNIVERSITY OF VERMONT

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Cover image: Engagement party at Las Flores, 1938. Photo courtesy Bob Strauss.

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INTRODUCTION

Executive Summary

The Las Flores Adobe National Historic Landmark is an adobe *rancho* located on Camp Pendleton, a United States Marine Corps base located north of Oceanside, California. The site has an unusually rich history and is representative of the broad patterns of settlement in the region, including prehistoric Native American culture, the Spanish mission system, Mexican secularization of mission lands that resulted in the proliferation of *rancho* culture, and agricultural use by Anglo-Americans. During WWII the site and many square miles of surrounding area came under the control of the War Department, when President Roosevelt dedicated Camp Pendleton as a Marine Corps base in 1942.

Figure 1: Watercolor of the Las Flores Adobe, E. S. Fenyes, 1913.

Since 2002, the United States Marine Corps (USMC) and the University of Vermont (UVM) have partnered in the stabilization, repair, and rehabilitation of the Las Flores Adobe. The scope of work has included installation of seismic retrofits, structural augmentation of existing roof frames, installation of replacement floor frame systems (with salvaged original flooring), reinstatement of the 2-story porches on the Monterey block, replacement of roof coverings, restoration of architectural millwork, ventilation improvements, rodent-proofing, repair of adobe walls and lime and earthen plaster finishes, and drainage and other site improvements.

This document provides an overall vision and defined goals for interpreting the Las Flores site. The following includes a brief introduction to the history and significance of the Las Flores site, an explanation of the rationale for interpretive planning at Las Flores, an overview of the existing conditions, recommendations for interpretation of the site, an implementation guide, and appendices that graphically describe the site and provide support for interpretative planning. For a more detailed description of the Las Flores Adobe and of its history and significance, please see please see Section 8 of the National Register nomination prepared by Wee and Mikesell[1] and the introduction to the *Las Flores Adobe National Historic Landmark Maintenance Manual*, 2006.

[1] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8.

BASIS FOR PLANNING AND DESIGN

Historical Background and Significance

The Las Flores Adobe is a National Historic Landmark located on United States Marine Corps Base Camp Pendleton in southern California. In addition to being the site of *Ushmai*, a Native American village and later a Spanish Mission outpost (an *estancia*), it is the site of an adobe ranch house, initially constructed between 1865 and 1868, and now one of the last surviving traditional adobe *ranchos* constructed in California.

The *rancho* complex consists of three fairly distinct blocks forming a U-shaped enclosure around a courtyard. The two-story Monterey block forms the south wing,[2] with the Hacienda block[3] on the west, and the carriage barn forming the north wing. Both the Hacienda block and the carriage barn have gabled roofs, while the Monterey block incorporates a hipped roof to shelter the two-story porch that wraps around that portion of the building. The one-room deep Hacienda block features a continuous *corredor* to the east, onto which all of the rooms in this block open. The *corredor* is continued onto the south side of the carriage barn. An early hedgerow and picket fence on the east side of the property completed the enclosure of a courtyard.

The ranch house buildings have evolved over the years to meet the changing needs of the occupants, and in their current configuration, retain significant elements from the 19^{th} and early-20^{th} centuries. The Marine Corps acquired the site in 1942, and since 2002 has partnered with the University of Vermont in the stabilization and rehabilitation of the building complex.

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[2] In the amended NHR nomination from 1992, this block is referred to as the Monterey block because of stylistic similarities to mid-nineteenth century architecture in Monterey, California. The term is widely used to refer to two-story adobe houses with extensive porches and classical detailing.

[3] The NHR nomination refers to this portion of the building as the Hacienda block because it resembles the early domestic buildings, or *haciendas,* of southern California. These buildings are typically one story tall, one room deep, with rooms opening onto a long, narrow porch or *corredor.*

The Las Flores property is significant architecturally as well as for its association with broad patterns of state and national history, its association with the lives of persons significant in our past, and for the archaeological information it has yielded and is likely to yield concerning the prehistory and history of the region. The structures currently on the site come from several different periods of history, and include the *estancia* ruins (c.1827), the ranch house and adjacent landscape (c.1868), a windmill (c.1900), and three buildings constructed by the Boy Scouts of America (c.1974), which include the Trading Post, restrooms, and a pump house.[4] Historic photographs and physical evidence indicate that several other buildings from dating from the time the ranch was in operation (1868 – 1968) previously existed on the site but have since been demolished. These demolished structures together comprise a large archaeological site just west and north of the main ranch house complex. Only the ranch house and the windmill contribute to the significance of the Las Flores Adobe property as structures; the BSA buildings are recent constructions and do not contribute. While most of the remains of Luiseño occupation of the site is archaeological and visually subordinate to the ranch house complex, the *estancia* ruins connect the site to the Mission system of Alta California under Spanish rule and form the backdrop for secularization and development of the *rancho* economy.

The period of national significance is 1868-1888 and corresponds with the time period during which the Forster family constructed and occupied the buildings, while the period of local significance is 1888-1941 and includes the Magee family occupation of the ranch.[5] Magee family occupation of the ranch represents a focus lasting for eighty years (1888-1968), when the family and farm figured prominently in state and local economies and community life. Many of the historic finishes in the ranch house date from Magee family occupation, including the existing configuration of the rooms, interior passageways, most of the fenestration, the existing roof

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[4] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 7.

[5] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8.

structure, and much of the surviving casework and fixtures.[6] Selection of a narrow period of interpretation would result in the loss of this material. In addition, because documentation of the Forster period is incomplete, restoration to the period of national significance would necessarily entail an unacceptable level of conjecture. As such, interpretation of the site should not be limited to the period of national significance; instead, this plan focuses on the period 1868-1942, providing for maximum retention of existing fabric and representation of both Magee and Forster family history in the interpreted buildings.

Recent stabilization of the *rancho* buildings, following a period of neglect by BSA, was begun in 2002 and is ongoing. The scope of work has included installation of seismic retrofits, structural augmentation of existing roof frames, installation of replacement floor frame systems (with salvaged original flooring), reinstatement of the two-story porches on the Monterey block, replacement of roof coverings, restoration of architectural millwork, ventilation improvements, rodent-proofing, repair of adobe walls and lime and mud plaster finishes, limited replication of period finishes on the building interior, restoration of period landscape features, and site drainage.

Site Management Goals

Many years have been invested in the stabilization and rehabilitation of the Las Flores Adobe, and the buildings and site are currently used as a museum and special events facility. The primary goals of the implementation of a comprehensive interpretive plan are to facilitate docent-led tours of the site, and to provide sufficient infrastructure for self-guided tours.

Accessibility

The Americans with Disabilities Act of 1990 establishes standards for access of public accommodations. The interpretive plan for Las Flores aims to provide full access to interpretive media to ensure that people with physical and mental disabilities have access to the information

[6] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sects. 7 and 8.

necessary to have a safe and meaningful visit to the site. It is a goal of the plan to provide the highest level of accessibility possible without compromising the site, by incorporating measures such as the identification of an accessible route for the interpretive trail as well as design of individual elements that allow for reasonable access to wayside exhibits. Viewing heights and angles of exhibits should be designed to be favorable for most visitors, including those in wheelchairs. Narratives will be concise and free from complicated or unnecessary language, and clear graphics will support the narratives to provide a comprehensive understanding of each exhibit without relying on the written component. Such measures are also in compliance with National Park Service policy: " …To provide the highest level of accessibility possible and feasible for persons with visual, hearing, mobility, and mental impairments, consistent with the obligation to conserve park resources and preserve the qualities of the park experience for everyone" (NPS Special Directive 83-3, Accessibility for Disabled Persons). An excerpt from the National Park Service's Accessibility Guidelines is included as an appendix to this report.

Primary Interpretive Themes

The primary interpretive themes are those concepts that are critical to a visitor's understanding and appreciation of the Las Flores site. Themes are listed below in chronological order, and include a brief summary of the most salient points. Themes become jumping off points for the interpretive exhibits, and it is the goal of this plan to interpret each theme at some point during the visitor experience.

Theme 1 – Luiseño village (pre-1800s): The area around Las Flores, formerly the site of a Luiseño village, has yielded evidence of at least 2000 years of human occupation. All evidence of Luiseño occupation of the site is archaeological and visually subordinate to the house and outbuildings.

Theme 2 – Mission San Luis Rey, estancia (1798-1834): In 1798, the Spanish assimilated the area into Mission San Luis Rey,[7] and today the adobe remains of a former Mission outpost (an *estancia*) dating from 1827[8] are visible on a hilltop approximately 200 yards west of the Las Flores buildings. The *estancia* connects the site to the Mission system of Alta California under Spanish rule, and forms the backdrop for secularization and development of the *rancho* economy.

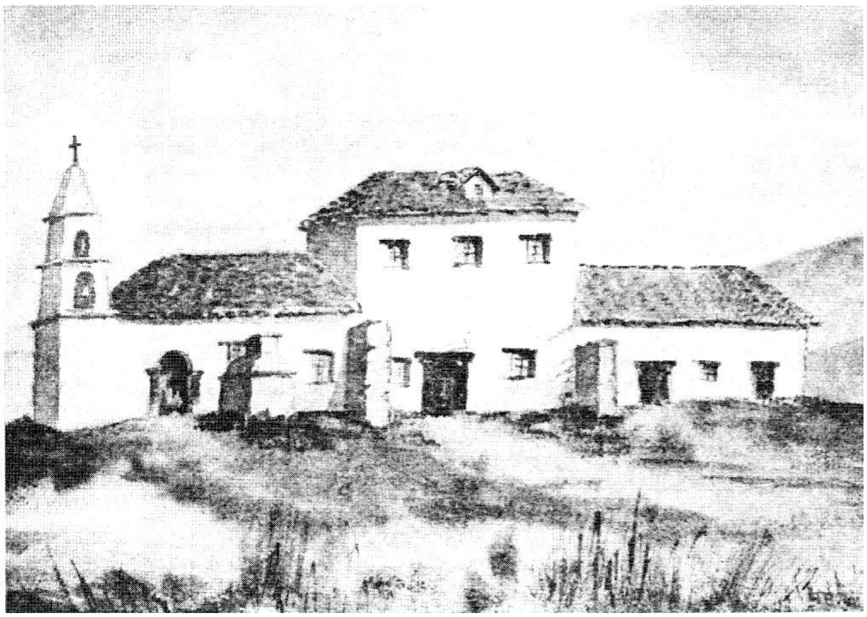

Figure 2: Las Flores *estancia's* San Pedro Chapel, from an 1850 sketch. Taken from *The Story of Mission San Antonio de Pala* (Carillo, J.M.) p. 10. Little is left of the structure, which is located approximately 200 yards west of the Las Flores complex.

Theme 3 – Andres and Pio Pico (1841-1864): The mission was secularized in 1834 by the Mexican government[9] and, in 1841, Pio Pico and his brother Andres received a land grant for the *Santa Margarita y Las Flores rancho*.[10] The Picos built the adobe house at Santa Margarita in

[7] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8.

[8] Ibid, Sect 8, p. 1.

[9] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8, p. 7.

[10] Ibid.

1842,[11] but in 1864, Pico sold an interest in the *rancho* to his brother-in-law, Don Juan Forster, in an effort to settle mounting debts and avoid foreclosure of the property. [12,13]

Theme 4 – Don Juan Forster, Marcus Forster (1864-1882): Forster built the adobe ranch house at Las Flores as a wedding present for his son, Marcus, sometime between 1865 and 1868.[14] Probably one of the last traditional adobe *ranchos* constructed in California, Las Flores is architecturally unusual in that it incorporates the vernacular traditions of the *hacienda* with the more formal detailing of the Monterey-style main block.

Figure 3: Thought to be one of the oldest known photos of Las Flores, this image of the east side of the complex is dated 1890, and would have been taken just a few years after Marcus Forster and his brothers sold *Rancho Santa Margarita y Las Flores* to James Flood.

Theme 5 – Flood / O'Neill, Magee (1882-1968): Following the deaths of Don Juan and Ysidora Forster in 1882, Marcus and his brothers sold *Santa Margarita y Las Flores* to a San Franciscan

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[11] Ibid.

[12] James M. Jensen (March 1969). John Forster – A California Ranchero. *The California Historical Society Quarterly*, 48(1), 42.

[13] Ibid.

[14] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8, p. 20.

named James Flood.[15] Flood hired Richard O'Neill to manage the ranch, and O'Neill leased the Las Flores adobe and 1500 acres to the Magee family in 1888.[16] In 1906, Flood deeded half interest in *Santa Margarita y Las Flores* to O'Neill,[17] and O'Neill allowed the Magees to stay on as tenant farmers. The Magee family figured prominently in the history of San Diego County in the late-19th and early-20th centuries, and had ties to early Mexican and Anglo settlers of the area. Under their care, the farm became one of the major producers of lima beans in the U.S.[18] Cliff May, a prolific builder credited with the creation of the widely popular California Ranch style, was a nephew of Magee-family matron Jane Magee, and often acknowledged his designs were deeply influenced by childhood summers spent at Las Flores.

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[15] Ibid, Sect. 8, p. 25.

[16] Jeanne Skinner Van Nostrand (June 1943). The American Occupation of Rancho Santa Margarita y Las Flores. *California Historical Society Quarterly*, 22(2), 175-6.

[17] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8, p. 25.

[18] Ibid, Sect 8, p. 28.

Figure 4: Members of the Magee family in a living area (Room 10) in the house. The Magees lived at Las Flores from 1888 until the last living family member's death in 1968.

Theme 6 – US Marine Corps (1942-present): When the United States Marine Corps acquired Las Flores in 1942, President Roosevelt issued a life estate to the Magee family.[19] The last surviving Magee family member died in 1968, leaving the ranch house unoccupied[20]. Starting in 1973, the Marine Corps allowed the Boy Scouts of America, Orange County chapter (BSA), to use the building site as a campground and jamboree site. In 1974, the BSA made extensive repairs to the adobe carriage house, which they used as a maintenance shop and staging area for activities at the campground. The BSA was unsuccessful in reversing deterioration conditions in the ranch house, and in the 1990s the building was closed for safety reasons.

Several supporting themes are important to the history of the site, including the prehistoric period, the mission period, secularization of the missions, Mexican land grants, Mexican

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[19] Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8, p. 28.

[20] Ibid.

California / Alta California, development of the *rancho* economy, Monterey colonial architecture, California haciendas / adobe *ranchos*, 19th-century cattle ranching / sheep ranching, early 20th-century California farming, the USMC acquisition, and the Boy Scouts of America (Orange County). These themes may be incorporated as desired to augment interpretation of the themes listed above.

Visitor Demographic and Experience

The Las Flores site is located on a Marine Corps base with controlled access. Visitors to the site are likely to represent a number of different groups and interests, but will be generally confined to active or retired military personnel, or those who have an affiliation with the Department of Defense or an organization like the Camp Pendleton Historical Society. Any other visitors would need to be sponsored by an organization on base such as the Cultural Resources Program or the History and Museum Program. Visitors to the site may include:

- Educational professionals: teachers and school groups from the base.
- Organized tour groups: local or regional groups including youth groups, church groups, civic groups, senior groups, groups interested in California history, and veterans' groups.
- California history and reenactment groups: local or regional groups including history enthusiasts, pioneer reenactment groups, historical societies, and other nonprofit groups interested in using Las Flores for special events. Visitors that may fall into this category include groups such as the Conference of California Historical Societies, the Carlsbad Historical Society, Los Cailfornianos, and California Living History.
- Professional subject matter visitors: scientists, historians, architects, archaeologists, historical society members, or other experts or professionals seeking information about the history of the area, including topics such as American Latino heritage, Alta California, *ranchero* life, California missions, Native American communities, and regional architecture.

- General interest visitors: visitors interested in the Las Flores Adobe National Historic Landmark or other aspects of the site and surroundings, including Camp Pendleton personnel and their families, visiting personnel, retired Department of Defense personnel, or other visitors sponsored by a relevant base organization.

Visitors should have the opportunity to conveniently and easily orient themselves to the start of a self-guided tour through clear directional signage and engaging wayfinding. Visitors should be able to navigate the site easily and comfortably, and engage with the interpretive exhibits. Visitors should gain an understanding of the architectural evolution of the building complex in relation to the changing needs of the site and its occupants. Additionally, visitors should be able to understand and appreciate both the site context and the value of the cultural resources at Las Flores, as well as have the opportunity to learn about past and ongoing preservation efforts for those resources.

Figure 5: Ranch foreman Steve Peters (center) and cowboys during a roundup, c.1910.

Challenges to Interpreting the Site

There are several logistical challenges associated with interpretation of the Las Flores site. A critical piece in interpreting any site is providing access to visitors so that they may gain from the experience. The Las Flores Adobe presents an unusual challenge to interpretation because of its location on a Marine Corps base. Visitation by people living offsite is typically restricted to pre-arranged tours conducted by docents, and while visitors living on the base have access to the site outside the context of docent-led tours, the interpretive materials available to them are very limited. In addition to the constraints of location, interpretation of the site is further challenged by uncertainty with respect to the property's end use. A final and suitable use has yet to be agreed upon for the site, and ultimately the use may affect visitor access to the site. Interpretation of the site is moreover made more difficult as the result of:

- A remote location that prevents managers and maintenance personnel from being regularly onsite, resulting in limited supervision.
- Infrequent human presence in the building, making it difficult to control animal pests and therefore currently impossible to maintain collections onsite.
- No current access to base water and sewer, limiting support for events and special functions.
- Limited funds and personnel for landscape maintenance and upkeep of the grounds, including features like the kitchen garden that are intended to have interpretive functions.
- An entrance and parking area that are not inviting or conducive to interpretation of the site.

EXISTING CONDITIONS

Present Use / Visitor Use

Presently the ranch house and site are periodically reserved for large gatherings such as unit barbeques, retirements and promotions, and changes of command. For most of these functions, visitors use the BSA buildings north of the ranch house, which include a large kitchen and dining room and a separate building with toilet facilities. Docents run tours of the ranch complex on a monthly basis, although there is no set narrative for these tours. Part of the recent rehabilitation work at the complex has included a partial upgrade of the kitchen and restroom plumbing in the main house, in anticipation of future use of the complex for gatherings and special events.

Pre-Visit and Arrival

Little information is available to visitors prior to their visit to Las Flores. Those wishing to learn more about the site can access some limited content via the Cultural Resources Program website and the Camp Pendleton Historical Society website. Visits must currently be pre-arranged, either with the docent group through the Office of the Base Historian or with the USMC Camp Pendleton cultural resources staff. Arrival to the complex may be either through the Las Pulgas gate, or by entering at the main Oceanside gate and driving north of the Vandergrift Boulevard junction to the west end of Stuart Mesa Road. There is a fence surrounding the complex and a gate at the main entry, which is typically locked. Signage to and within the site is very minimal. Parking is located immediately to the left of the drive after passing through the gate and is delineated by railroad ties. The current arrangement is unattractive and does little to welcome and orient visitors to the site.

Figure 6: The south elevation of the Monterey block, ca. 1917. This was originally the primary façade of the house, and is the proposed location for the start of the interpretive trail.

Points of Interest

Points of interest are located around the site and relate to each of the primary interpretive themes. The principal point of interest is the main house, comprised of the two-story Monterey block with its characteristic wrap-around porch, and the one-story hacienda block, defined by its low covered *corredor* (porch) along the east side of the building. The Monterey block includes the oldest parts of the house, dating to initial construction of the *rancho*. The hacienda block was constructed in the 19^{th} century, in two stages. An adobe barn (sometimes called the Carriage House) is located immediately north of the hacienda block, and is connected by a covered entry, or *zaguan*. The house looks out onto a large courtyard, defined on its eastern edge by an evergreen hedgerow.

Figure 7: East elevation of the one-story section of Las Flores, ca. 1910. The *corredor* was not only a hallway connecting the rooms in this part of the house, but also functioned as a gathering space (see cover image, this report) and an outdoor living area.

On the west side of the house, visitors can see a reconstruction of the historic kitchen garden, along with an installation marking the footprint of a kitchen addition thought to have been constructed (and later demolished) during the Magee period. West of the ranch complex is a wide trail that leads to the sheltered adobe remains of the *estancia*.

Figure 8: Kitchen garden on the west elevation of the house, ca. 1935. An addition was made at some time during the Magee period to the west side of the one-story block to house the kitchen, just visible beyond the garden in the image at left, but was removed after acquisition of the property by the Marine Corps. The kitchen garden has been recreated as part of the rehabilitation of the property, and is a proposed stop along the interpretive trail. Rather than reconstruct the kitchen addition, an outline of the building footprint has been added. Interpretation of this area should include photos of the historic configuration.

Existing Facilities for Interpretation

There are currently few facilities for interpretation permanently in place. Two interpretive panels, one describing the site in pre-history and the other briefly summarizing *rancho* history, have been installed in the parking area. A national historic landmark plaque is located on the east side of the complex, at the edge of the courtyard. Apart from these, there are no interpretive resources available to visitors conducting their own tours of the site. By calling the Office of the Base Historian, visitors can arrange in advance to participate in docent-guided tours offered once each month.

RECOMMENDATIONS

Goals of Interpretive Planning

Focusing on specific interpretive goals for the Las Flores site, and planning for their phased implementation, will help to ensure that the interpretive plan is implemented efficiently, as funding allows. The goals outlined below are drawn from interpretive best practices, and can be expanded upon to address the unique concerns of this site. Interpretation of the Las Flores Adobe should:

- Improve communication, orientation, and access to information and interpretation. This will include:
  - creating a welcoming and well-marked entrance that clearly guides visitors to a parking area nearer the starting point of their tour. This can be achieved through the reorganization of the current parking area, as well as the creation of a new area on the south side of the property;
  - installing clear wayfinding markers along the interpretive trail;
  - and developing a strategy for making information about the site accessible by providing it in multiple ways.
- Include a strategy for orientation and interpretive exhibits that will guide the visitor on an informative and enjoyable self-directed walking tour of the site. This will include:
  - providing informative and accessible exhibits that are accurate, durable, and attractive;
  - offering areas for rest and reflection along the trail;
  - and providing multiple means and opportunities for visitors to experience the site.

- Provide visitors with material that will educate them about the site and help to foster a greater appreciation of the Las Flores Adobe and its place in local, regional, and national history. This will include:
    - starting visitors on a tour that establishes the 19th century origin of the *rancho* and presents a picture of *rancho* life;
    - interpreting the evolution of the building complex;
    - making clear the connection between Las Flores, Cliff May, and California ranch style architecture;
    - and interpreting the *estancia* to provide information about the mission and Luiseño periods.

Site-wide Recommendations

The following is a recommendation of wayfinding and interpretive exhibits that will help facilitate a greater understanding and appreciation of the Las Flores site, in both self-guided and docent-led tours. Site-wide recommendations include: a) the establishment of an interpretive trail that connects key points of interest around the site; b) re-design of the entrance to identify the property as a Camp Pendleton historic site and invite public visitation, and; c) reconfiguring the existing parking area to focus attention on the landscape and buildings upon entrance to the site, improving first impressions, and installing signage that will direct visitors to a smaller parking area nearer the beginning of the interpretive trail. With restoration of native ground cover on the existing lot, the space will merge visually with the open field adjacent to it; the space can continue to serve as overflow parking for large events;[21] d) re-design of the area around the *estancia* to provide public access, interpret the resource,

[21] As an alternative to the proposed new parking area south of the ranch house complex, the existing parking area could be reconfigured so it less negatively affects the entrance to the site. The area marked for parking could be limited to a small area of the existing lot, leaving the rest of the lot to be reseeded and used only for large events. Clear signage would be required to direct visitors to the start of the interpretive trail on the south side of the house.

and provide a rest area along the interpretive trail.

The development of a sign plan will help to 'brand' the Las Flores Adobe as one of Camp Pendleton's historic sites, will address the need for road signs directing visitors to the site, and will provide design guidelines for creating the directional signage and maps used within the site boundaries. Media provided for general information and visitor use, whether online or printed, should be reviewed and adjusted as needed to provide the most accurate and up-to-date information. An updated map of the site can be offered for download on websites hosted by the Cultural Resources Program, the Camp Pendleton Historical Society, and the Office of the Base Historian.

Interpretive Media

This report includes a proposed route for a self-guided interpretive trail at Las Flores, as well as concepts for each stop along the route; an illustrated guide is included in the section entitled Self-Guided Interpretive Trail, below. These concepts can be used to create a series of wayside exhibits that guide the visitor in their tour of the site. The next phase should involve the development of graphics and selection of imagery for each exhibit, along with descriptive text as required. Concept drawings will further describe each proposed exhibit, including graphic layout, dimensions, style, and location.

This report also proposes an orientation exhibit, including a map of the site that shows the location of each of the interpretive exhibits along the trail as well as the relationships of different features on the site. Interpretive exhibits will present the property history and its historical context, and describe the architectural evolution of the ranch complex, helping visitors to recognize connections between the various elements of the buildings and landscape, their place in the history of the *rancho*, and their significance. Exhibits will describe the history of the site and its occupants, the construction chronology of the buildings, and the preservation efforts of the Marine Corps.

Wayside exhibits provide information regardless of the availability of staff or volunteers, and graphics and imagery can help to show the development of site elements over time. An interpretive trail with a series of wayside exhibits provides a sense of discovery for the visitor and allows each visitor to explore the site at their own pace. Exhibits should be designed to minimize their visual impact on the site while still being easily visible to visitors. Exhibits should be designed in such a way that they can stand alone, or be used to supplement interpretive brochures and docent-led tours.

House Museum Functions

House museums offer a way to interpret sites by using original furnishings arranged in such a way as to reflect usage of the rooms, giving visitors an idea of the day-to-day existence of the people who lived there. USMC Camp Pendleton has acquired some of the original Forster family furniture, however, the collection is incomplete and would likely need to be augmented in order to show a completely furnished room. While furnishing one or more of the rooms as a house museum may help to convey to visitors visceral impressions of life at Las Flores during the period of significance, exhibits that are overly conjectural are more likely to convey the wrong impressions. Historic documentation exists for portions of the living room (Room 10) and dining room (Room 3), but the photos are limited in scope and portray interiors dating from the early-20th century, near the end of the period of significance. Additionally, despite ongoing attempts to control animal pests, squirrels, rats, and mice currently access the interior of the house and barn and are likely to cause extensive damage to collections stored there. In light of this, it is recommended that furniture be shown with other objects owned by the Forster, O'Neill, and Magee families in short-term exhibits for special events only.

Figure 9: The Magees in the dining room at Las Flores, undated. Very few images survive of the interior of the house. Although some of the original Forster family furniture has been located, existing conditions and the persistence of rodents at the site require that any furniture installations be temporary and for special events only.

Self-Guided Interpretive Trail

The following figures describe a conceptual-level design for an interpretive tour of the property that can be self-guided or incorporated in a docent-led tour scheduled through the Office of the Base Historian. This design is based on the creation of wayside exhibits at the ranch house complex and *estancia* that are focused on the interpretive themes identified in this report, and assumes that changes to the entrance, parking area, and site circulation will be made to enhance visitor experience. Suggestions for phased implementation are offered in the Implementation Plan below.

Interpretive trail overview: Map of proposed Las Flores interpretive trail and wayside exhibits / interpretive panels. From right to left, the entry from Stuart Mesa Road, the barn and auxiliary buildings, the Las Flores Adobe, and the *Asistencia*. Numbers correspond to the figures following this map. The trail will provide a route for self-guided tours of the property focusing on features visible without access to the ranch house interior, as well as a route for docent-guided tours that can also include access to the building interior.

Full implementation of this plan will include: a) reconfiguration of the entrance (fig 1); b) relocation of visitor parking to an area south of the ranch house (figs 2-4); c) creation of an orientation exhibit to provide visitors with an overview at the beginning of the tour (fig 4); d) installation of interpretive panels and other wayside exhibits at points along the trail (figs 5, 6, 8-13); e) adaptation of interior spaces to support exhibits and special functions (fig 7), and; f) reconfiguration of the area around the *estancia* to provide visitor access and interpret the resource.

Implementation of this plan can occur incrementally, and some suggestions for phasing are included in the section on **Plan Implementation**, below.

Figure 1: Entry to the Las Flores site. Masonry walls define the entry and engage prickly pear cacti in fence rows that appear in historic images. The gateway mimics the entrance to the Santa Margarita Ranch House complex, and features the Santa Margarita y Las Flores brand, identifying Las Flores as one of Camp Pendleton's historic sites. The masonry walls anchor a simple pipe gate that can be locked after hours. Signage clearly marks the drive without overwhelming the entry.

These improvements are intended to make the entrance more attractive and inviting to visitors. Incorporating the cactus-lined fence rows in the entrance calls attention to the only surviving historic element and eliminates chain link fencing immediately adjacent to the entrance. Using the rancho brand to link Las Flores with other Camp Pendleton historic sites will help to raise the profile of all of the sites and connect visitors to base- and historical society-sponsored websites that can provide pre-visit orientation, contextual information, and lists of additional resources.

Figures 2 and 3: Welcome and orientation sign, with proposed parking updates. The sign will welcome visitors to the site, provide website / contact information for cultural resource organizations on base, and direct drivers to a parking area south of the ranch house. The existing parking area will revert to an open space that more closely reflects the historic configuration of the site. Existing railroad ties will be removed, and simple pipe barriers can be added along the drive to discourage day-to-day parking. Under this scenario, the initial orientation of visitors will be to the ranch house and other historic resources on the site, rather than to the parking lot. Removal of pipe barriers will make the field available on a temporary basis for special events parking on a case-by-case basis.

Figure 4: New parking area and orientation exhibit. A new parking area, paved with base course or another temporary material, will be installed on the south side of Las Flores, aligning visitors with the original (19th century) primary facade. Partially buried railroad ties and a simple post and beam or post and cable barrier demarcate spaces without detracting from the site.

The orientation exhibit will introduce visitors to the site and provide a map and overview of the interpretive trail. Printed copies of the map can be made available here, along with a QR code, so that visitors can take a pamphlet or scan the QR code to access the information digitally. An accessible path of decomposed granite (or similar material) will guide visitors past the orientation exhibit and on to the first wayside exhibit.

Figure 5: Wayside exhibit and interpretive panel featuring the Monterey block. The path from the parking area leads the visitor to this first stop, and a wayside exhibit / interpretive panel provides information concerning the original orientation of the property and configuration of the primary façade prior to c. 1918. The panel narrative can provide the historical context for Pico's land grant and purchase of Luiseno lands in the formation of the Rancho Santa Margarita y Las Flores, and the events leading to the transfer of ownership to his brother-in-law, John Forster, and construction of the house at Las Flores in the 1860s. Interpretive media can include reproductions of the early paintings, drawings, and photographs in depicting the role of formal entries in the architecture of the 19th century.

Figure 6: Wayside exhibit at the courtyard entrance on the east side of the house. From the first exhibit, the trail continues east and north along the picket fence, stopping at the front gate and National Historic Landmark plaque nearby. By the early-20th century, residents approached and entered the house from this gate, and a hedge enclosed the yard on this side of the house, which became an outdoor space for living, working, and entertaining.

The interpretive panel provides narrative information on the sale of the rancho to James Flood and Richard O'Neill following Forster's death, and O'Neill's lease of Las Flores to the Magee family. The changing roles of formal entries and the importance of outdoor space for living and working in early-20th century architecture can be depicted using historic images and axonometric drawings depicting changes made to the ranch house by the O'Neill family c.1918.

Figure 7: Room 10 on the first floor of the Monterey block. For docent-led tours and special events, visitors can tour portions of the ranch house interior. Individual rooms can serve different functions based on size, accessibility, and period finishes (see Appendix D). Because Room 8 has been minimally altered from its 19th-century configuration, it might serve to house exhibits of Forster furniture and other objects related to early occupation of the house; Room 9, entered from the *corredor*, might house a permanent exhibit of historic images. Room 10 is a relatively large and well-lighted space easily accessed from the *corredor*, and so is suitable for temporary exhibits and special functions involving more than just a few participants.

It is intended that rooms in the hacienda block will be used in support of special events; Room 5 will eventually function as a restroom, and Room 2 as a kitchen. Room 3, historically used as a dining room, can be used as overflow space for food preparation or for temporary exhibits of the furnishings for this space.

Other of the rooms are less well-suited for visitor use. Upstairs spaces are inaccessible, floor frames have limited structural capacity, and some of the floor coverings are fragile and easily damaged. Rooms 1 and 6 are storage spaces. The rooms listed above provide plenty of opportunities for interpreting ranch house history of every period without using these spaces.

Figure 8: Interpretive panels along the *corredor*. Posters developed for this planning project can be printed on weather-resistant materials and installed at intervals along the *corredor* in a permanent exhibit. These make use of aesthetic conventions associated with advertising from the 1930s and 40s (near the close of the period of significance) and are intended to be compatible with the finishes from this time period that are typical of most of the hacienda block rooms.

These panels address Magee family history, ranch house construction chronology, historic landscape features, and stabilization of the buildings by the Marine Corps. Attractive mounting hardware can be designed to minimize visual impacts of the installation and fabricated of durable materials.

Figure 9: Interpretive panel, north *corredor*. The last exhibit along the *corredor* is devoted to Cliff May and the California Ranch House design he helped to make popular in the 1940s and '50s. May was a distant relative of the Magees and spent summers as a boy at Las Flores. He credited his time there for the deep appreciation he developed for the early rancho architecture of California, and included a drawing of the *zaguan* doorway visible from this exhibit in one of his publications.

In the 1930s and 40s, May built scores of houses in the California Ranch House style, and wrote two books (published by Sunset Publishing) and was featured in countless articles that helped to popularize the style across the country.

Figure 10: Seating on the northwest corner of the house. Simple benches provide a place for visitors to sit with a view of the kitchen garden, while low plantings on the north discourage visitors from straying off the path. A screen wall with trellised plants hide the transformer and electrical panel from view.

The wayside exhibit at this location interprets ranching activities that include the keeping of livestock in corrals that once existed at this location, the multiple ways in which the barn supported ranching activities that included the storage and repair of machinery, and the repair and maintenance of ranch structures. Surviving contextual features visible from this location include the adobe barn and a windmill; historic photographs available for interpreting ranch work include numerous images of the barns and corrals, as well as images of mounted cowboys participating in round-ups, and images of the wooden machinery used in cultivating lima beans.

Figure 11: Wayside exhibit at the former location of the kitchen addition; the building location is identified by gravel paving of the building footprint. The wayside exhibit at this location interprets household tasks associated with running a ranch in the early-20th century, including the tending of a garden, housing and feeding several ranch hands, and the setting aside of dooryard space for these activities in the rural architecture of the late-19th and early-20th centuries. Interpretive media include historic images and oral histories collected from family members and pertaining to the daily lives of ranch staff, and the close relationships they formed with members of the Magee family.

Figure 12: Wayside exhibit. This stop west of the main ranch complex describes the area as it might have appeared before the arrival of Spanish and Anglo settlers. What remains of the Luiseño village of Ushmai is archaeological, but at one time there may have been earthen and thatched homes and other buildings grouped together in the landscape. The Luiseño people, who call themselves Payomkawhichum, or People of the West, were traditionally hunters and gatherers and lived in small communities throughout the surrounding area.

Including this stop on the interpretive trail will require interpretive panels explaining the archaeological significance of the area and describing a traditional Luiseño village, benches for visitors, and road improvements allowing for disabled access of this wayside exhibit.

Figure 13: The *estancia* ruin and wayside exhibit. The penultimate stop on the interpretive trail takes visitors to the ruins of the *estancia* west of the ranch house. The *estancia* was an extension of Mission San Luis Rey, sited to harness the labor and resources of the pueblo and convert its inhabitants to Christianity. The ruin represents the best opportunity to interpret Luiseño occupation of the site and the mission period, and for this reason is essential to telling the story of Las Flores.

Including the ruin on the interpretive trail will require significant changes to the current configuration of the site to include an attractive shelter over the ruin; some way for the public to access it; interpretive panels explaining the Mission system, secularization, and the subsequent consolidation of Pico's rancho; benches for visitors, and road improvements allowing for disabled access of this wayside exhibit.

Figure 14: View of the valley and foothills and wayside exhibit. The final stop on the interpretive trail directs visitors to a view back over the coastal valleys and towards the mountains east of the site. The Luiseño people once inhabited a region extending along much of the coast in this area, as far north as present-day San Juan Capistrano and south to what is now Carlsbad. The implementation of the Mission system and later the influx of settlers and ranchers had a negative and lasting impact on the Luiseño people. In recent years there has been a resurgence of interest in cultural preservation and language revitalization for the tribe. Today there are seven bands of Luiseño people: San Luis Rey, Pala, Pauma, La Jolla, Ricon, Pechanga, and Soboda.

Including the last stop on the interpretive trail will require access for the public; interpretive panels explaining the Luiseño's former territory, the impacts of colonization, and current efforts for cultural revitalization; secularization; and road improvements allowing for disabled access of this wayside exhibit.

Wayside Interpretive Panels

At each wayside exhibit, there are opportunities to direct visitor attention to important features of the property while providing information relating to the interpretive themes laid out in the Primary Interpretive Themes section of this report (beginning on p.5). The interpretive panels provided at each wayside exhibit should make creative use of the available media, including historic images, oral histories, architectural drawings, collections objects, and features of the buildings and landscape, to tell parts of the Las Flores story, and connect visitors with the history of the site.

As part of this project, a series of interpretive posters were created and displayed in a temporary exhibit as part of a ranch days celebration at Las Flores (see Appendix B). The posters provide information on the history of Rancho Santa Margarita y Las Flores, the families who settled there, the construction chronology of the buildings at Las Flores, historic landscape features, and the rehabilitation project undertaken by the Marine Corps. During the weekend event, scores of visitors spent time viewing the posters in the exhibit on the *corredor*.

The posters provide examples of the ways the available interpretive media can be used to provide visitors with information related to the people and events of Las Flores. Stylistically, the posters make use of aesthetic conventions typical of 1940s-era advertising. Many of the rooms at Las Flores were last altered in the 1930s and 1940s, and the period of significance ends in 1942. One of the goals in using aesthetic conventions from this time period is to evoke the same time period in the interpretive materials. The posters provide visitors with an opportunity for immersion in the era, while learning about the property.

Implementation Plan

It is not necessary that every element of the interpretive plan presented here be implemented at once. Implementation can be phased to meet Marine Corps goals incrementally, based on the availability of funds and public response to the program. In what follows, this report proposes a first phase consisting of the most easily achieved improvements, followed by phases focused on improvements involving more substantial design and construction costs.

Phase I includes design and installation of the wayside exhibits focused on the ranch house exterior; these include the exhibits at 5 and 6, and 8-11. These constitute the basic elements of a self-guided tour, will provide important support for the existing docent-led tour program, and can be put to use almost immediately. These improvements are likely to result in the biggest transformation in the way the public view and use the site, and require the least commitment financially or in terms of the time required to make the basic tour operational.

Implementation will require design of interpretive panels, the hardware for mounting them, and supporting infrastructure, including paving of pathways, and the benches, plantings, and screens for defining rest areas along the trail. This can include printing and installation of the posters (Appendix B) to create many of the interpretive panels. Hardware for mounting them can be fabricated locally. Benches once belonging to the Magee family can be repaired or replicated to provide seating along the trail. Pamphlets can be produced that are available on site or as a digital document or website, accessed by visitors using a QR code or web address. Excerpts from the National Landmark nomination have been included in Appendix C to provide information related to the interpretive themes for docents leading tours.

Phase II might be focused on expanding the use of interior spaces to support docent-led tours and special events. This might start with the creation of an exhibit focused on some of the more than 100 historic images (paintings, drawings, and photographs) that have surfaced as the result of research completed on the ranch house to date. This is likely to require the specification of hardware for mounting and hanging the exhibit, as well as printing and captioning the images. This phase might also include temporary exhibits of furniture and other objects connected to the families living at Las Flores in the later-19th and early-20th centuries, of photographs and artwork related to the *Rancho* (collections held by some of the descendants are extensive), or of the architecture of Cliff May, for example. Exhibit spaces can be brought online one room at a time, and may eventually require electrical upgrades, installation of light fixtures, and exit signage.

Designing and constructing a new entrance, reconfiguring site circulation and providing alternative parking, and creating a wayside exhibit (with the required infrastructure) at the *estancia* can each be treated as a phase of its own. Each will require more substantial involvement of designers, fabricators, and installers, and can be undertaken as the goals of building stewards and/or use of the site by the public require. The university team involved in the stabilization of the ranch house complex include architects, landscape architects, engineers, fabricators, and installers, and these projects can be funded through cooperative agreements should the Marine Corps so desire.

Additional Suggestions for Interpretation

Additional suggestions for interpretation include creating downloadable maps and brochures that visitors can access through the website of the Camp Pendleton Historical Society, the Office of the Base Historian, or the Las Flores Adobe – American Latino Heritage page of nps.gov, offering Spanish and English versions of the interpretive brochure, and providing more in-depth materials to be used by education professionals or for home-schooled students.

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Van Nostrand, Jeanne Skinner (June 1943). The American Occupation of Rancho Santa Margarita y Las Flores. *California Historical Society Quarterly*, 22(2), 175-6.

Wee and Mikesell. National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8.

APPENDIX A: MAPS

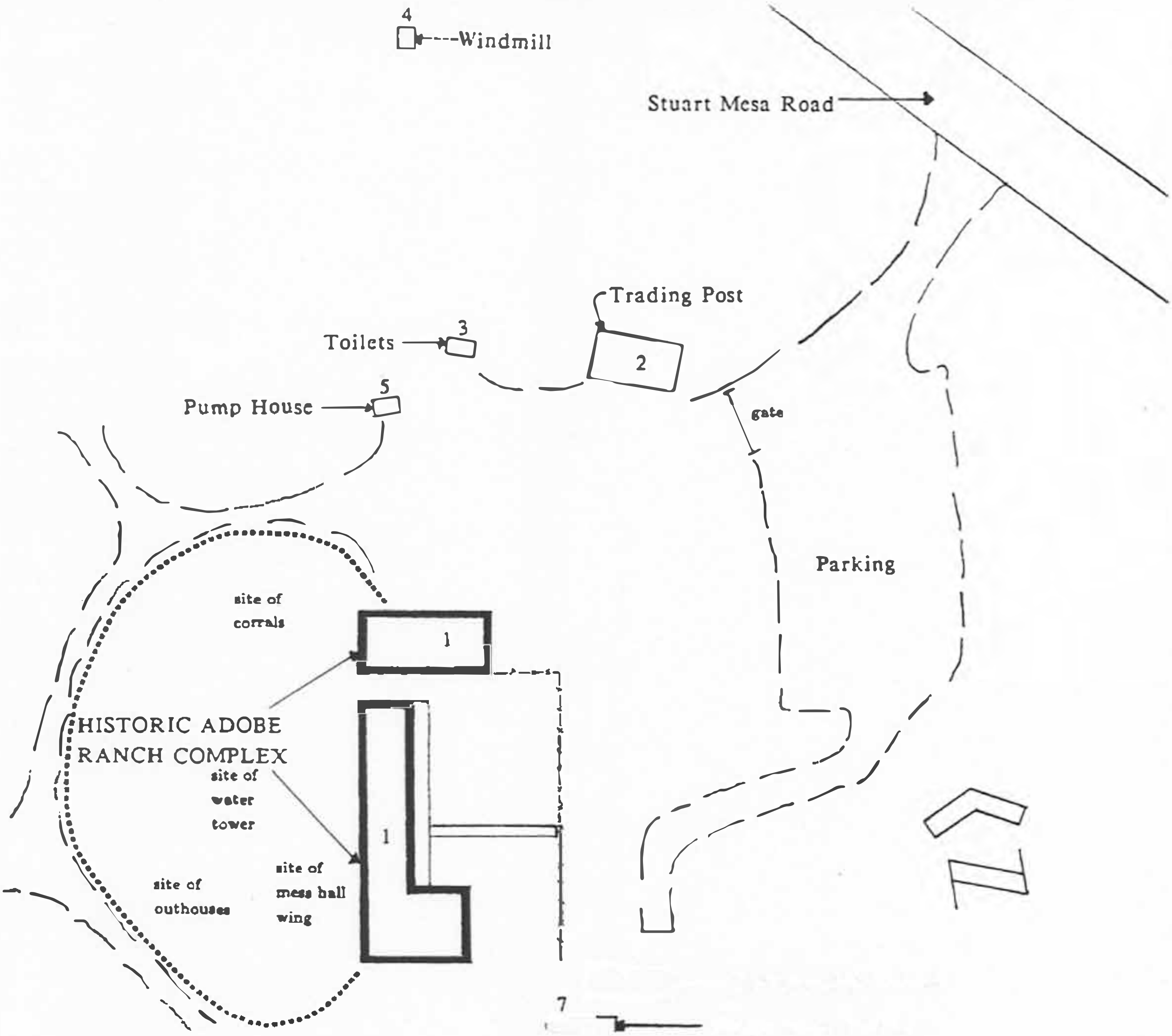


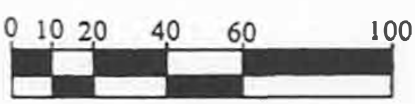
Figure I.

LAS FLORES ADOBE

Camp Pendleton, California

Site Plan

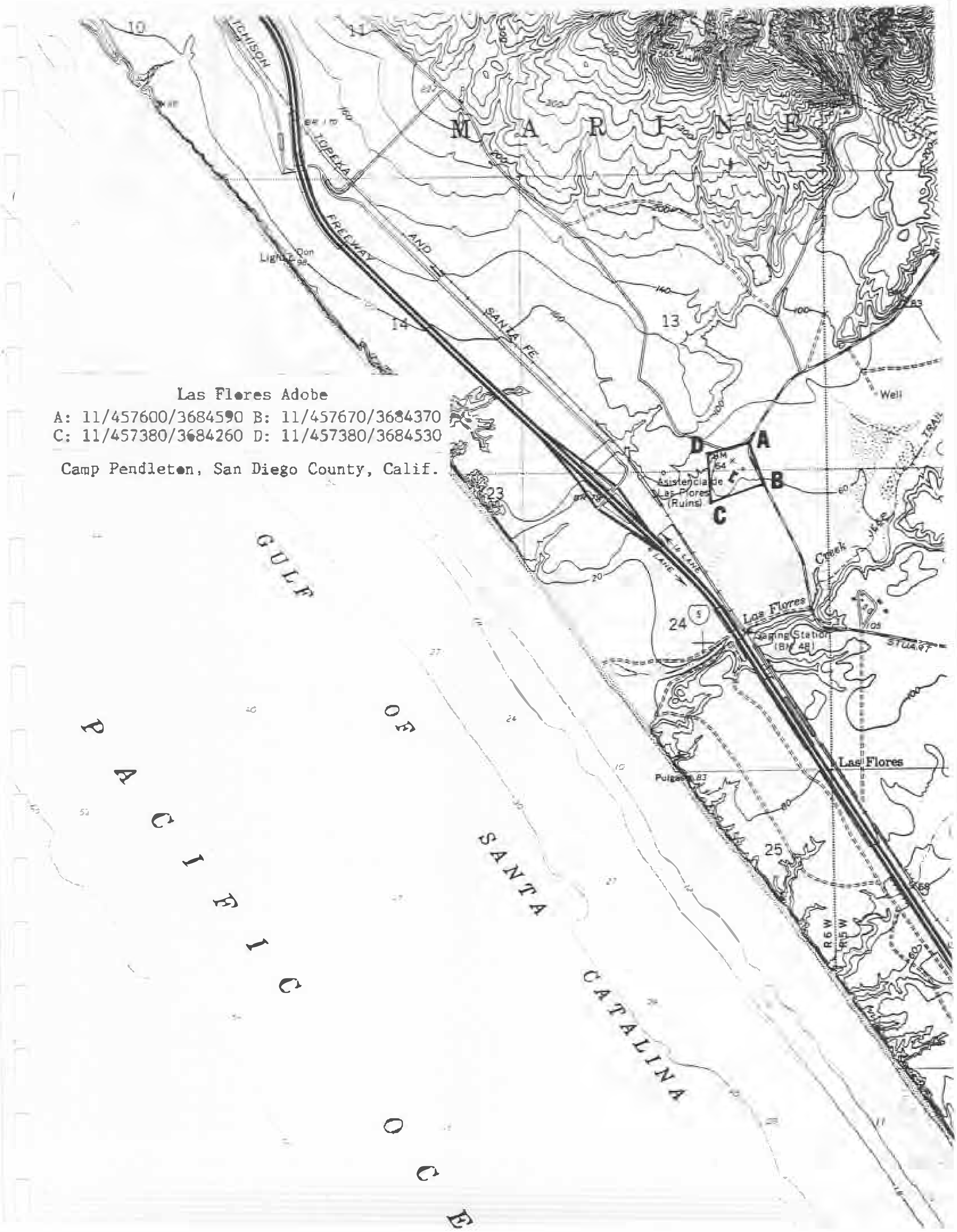
December 1990



Scale

······· = Archeologically Sensitive Zone for Historic Resources, sites referenced are approximate locations.

Revised from Wee and Mikesell, National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California.



Las Flores Adobe
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C: 11/457380/3684260 D: 11/457380/3684530

Camp Pendleton, San Diego County, Calif.

APPENDIX B: INTERPRETIVE POSTERS CREATED FOR RANCHO DAYS, SEPTEMBER 13, 2014

The people who made the place - a rich and colorful history!

Las Flores, pre-1918. Painting by John Jay Baumgartner. Image courtesy Bob Staussss.

Santa Margarita cowboys, 1920s. Image courtesy Bob Stauss.

On the corredor at Las Flores, ca. Marine Corp Base Camp Pendleton archives.

In front of the corredor, Las Flores. Photo courtesy Bob Stauss.

In the dining room at Las Flores. US Marine Corps Base Camp Pendleton archives.

Bob an dJane's wedding announcement party, on the corredor at Las Flores. 1938. Photo courtesy Bob Stauss.

The Las Flores site has been an important center of human activity for at least 2000 years. At the time of Spanish settlement, a *Luiseno* pueblo already existed at Las Flores, and an *Asistencia*, or Mission outpost, was established in 1823. In 1841, Pio Pico, the last Mexican governor of Alta California, received a grant for a vast tract of land lying adjacent to the pueblo at Las Flores. In 1843, Las Flores was added to his holdings to form the Rancho Santa Margarita y Las Flores.

In 1864, Pico sold the rancho to his brother-in-law, Don Juan Forster, to avoid foreclosure of the property. Forster built the adobe ranch house at Las Flores for his son, Marcus, in 1868. Probably one of the last traditional adobe ranchos constructed in California, the house is unusual in that it incorporates the vernacular architectural traditions of the hacienda with the more formal detailing of the Monterey-style main block. Following the deaths of their parents in 1882, Marcus and his brothers sold Santa Margarita y Las Flores to pay family debts. San Francisco business partners James Flood and Richard O'Neill bought the rancho and leased the Las Flores adobe and its acreage to the Magee family in 1888.

In the early-20th century, the farm was one of the major producers of lima beans in the U.S. The USMC acquired Las Flores in 1942, just after the US entered the Second World War, and President Roosevelt issued a life estate to the Magee family. The last surviving family member died in 1968, leaving the ranch house unoccupied.

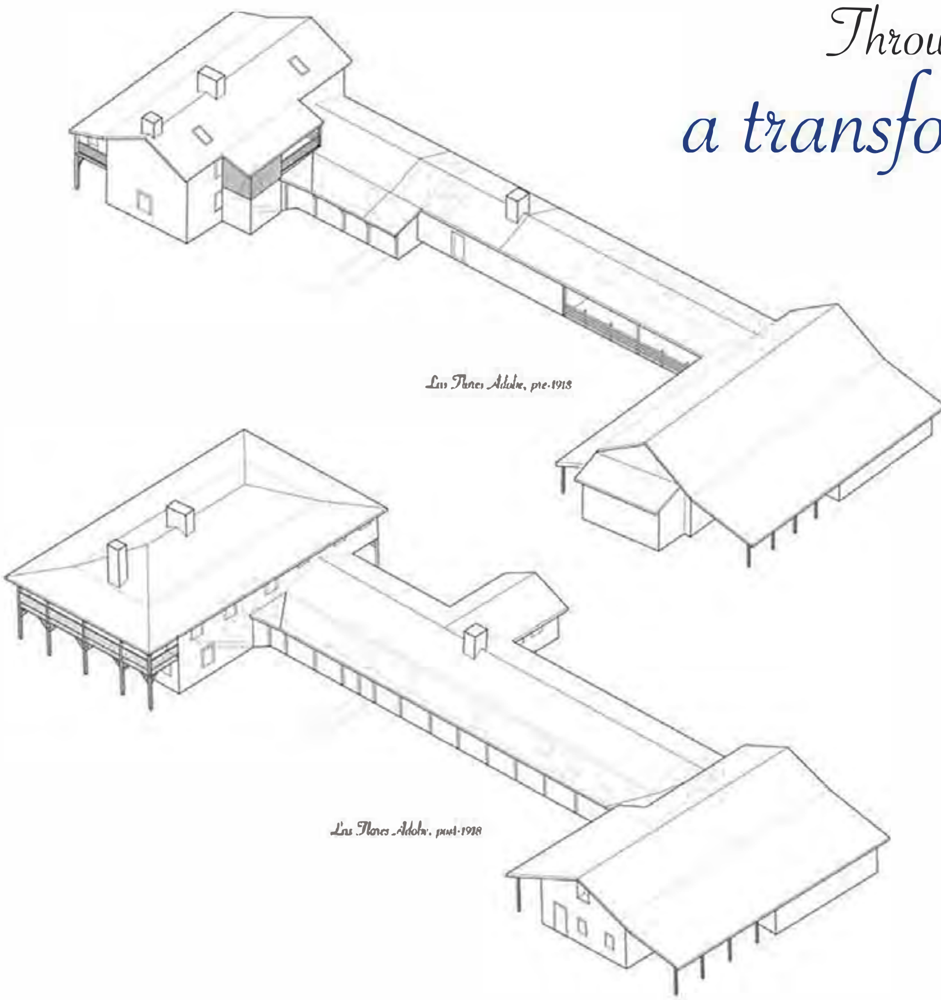
The property is a National Historic Landmark, and is significant archaeologically and architecturally, as well as for its association with broad patterns of state and national history, and its association with several historically significant people. The period of national significance is 1868-1888 and corresponds with the time period during which the Forster family constructed and occupied the buildings. However, Magee family occupation of the ranch lasted for 80 years, and the family and farm figured prominently in community life and state and local economies at least until the USMC acquired Las Flores in 1942. As a consequence, interpretation of the site is not limited to the period of national significance, but is focused on the period 1868-1942, providing for maximum retention of existing fabric and representation of Magee family history in the interpreted buildings.

LAS FLORES ADOBE

NATIONAL HISTORIC LANDMARK

Camp Pendleton, California

Through the years...
a transformation!



1868 to 1917

As initially constructed by John Forster in 1868, the Las Flores Adobe consisted of the two-story Monterey block, and at least two rooms at the south end of the Hacienda block; by the end of the 19th century, the complex also included a barn, stables, and corral. The building complex has been altered several times since 1868, resulting in the three connected blocks (all constructed primarily of adobe) seen today.

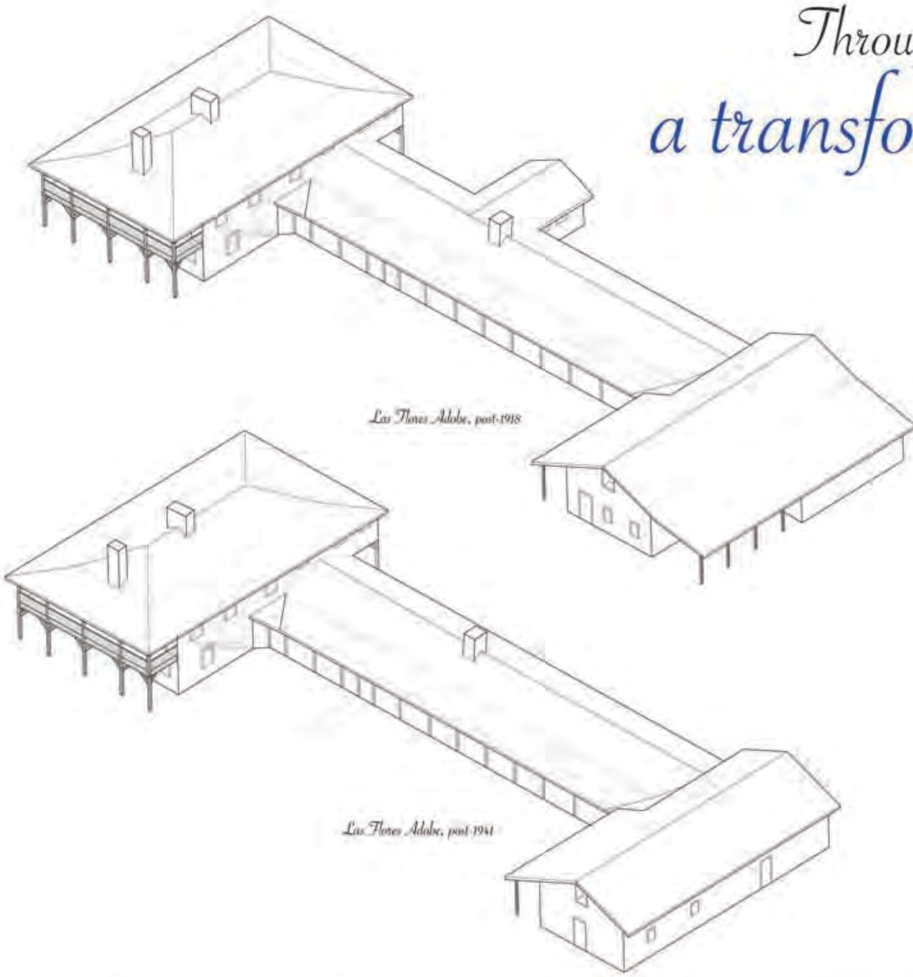
CONSTRUCTION HISTORY *1868-19917*

The Monterey block originally had a gabled roof, and rooms were laid out around a central hallway or zaguan. A full-length two-story porch covered the front façade. The zaguan functioned as a passageway from the front of the building to the fenced courtyard and corral on the north. The Hacienda block joins the main block on the north and is a low, one room deep structure with a continuous corredor on the east. A detached block of rooms was separated from the main house by a narrow passage (currently the bathroom). The north end of this detached block was used as corral space; the south rooms were originally used as living space.

After 1917, the house was extensively remodeled. Original porches on the front and rear were replaced by a wrap-around porch, creating the current pyramidal roof. Stables at the north end of the Hacienda block were enclosed, and the primary entrance to the ranch house was moved from the south façade of the Monterey block to the east side.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Through the years...
a transformation!



Las Flores Adobe, post-1918

Las Flores Adobe, post-1941

pre- and post- 1942

A major renovation of the ranch house, c.1918, included roof replacement on Monterey and Hacienda blocks, construction of a two-story porch surrounding the Monterey block, enclosure of the passageway on the west to create a bathroom, and extension of the corredor to the barn.

CONSTRUCTION HISTORY *circa 1942 and later*

Most of the alterations since 1918 have been made to the Hacienda block and barn, as uses of the rooms and spaces were adapted to the work routines of the ranch. Between 1918 and c.1930, the Magee family added a kitchen wing on the west side of the Hacienda block, and several rooms were added or altered by enclosing portions of the wrap-around porch. Sometime after 1941 the kitchen wing was demolished, and kitchen and pantry were relocated to the north end of the Hacienda block. In 1968, the house became vacant when Ruth Magee passed away. In 1974, the Boy Scouts of America (Orange County chapter) made extensive repairs to the adobe barn, but apart from this very few changes were made until the USMC began rehabilitation work beginning in 2000.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

A perilous descent into a near ruinous state...

Two-story porches on the south, east, and west were lost in the 1980s, exposing perimeter walls to stucco loss and additional water damage.

The barn was extensively remodeled in the 1970s, including CMU / concrete infills in damaged adobe walls, and installation of a concrete bond beam that changed roof lines and exposed adobe walls to additional damage.

Failure of the roof covering in several places exposed roof framing and adobe walls to water damage.

Failure of roof flashings and the exterior stucco resulted in partial wall collapses and the decay of wood lintels over windows and doors.

Water **damage, neglect,** and **vandalism**

Following the death of Ruth Magee in 1968, the buildings at Las Flores fell into disrepair. Years of neglect, water damage, vandalism, and burrowing rodents and other animal pests, resulted in listing of the Historic Landmark on a Federal list of most- endangered properties. A phased stabilization project to save Las Flores was started in 2000, beginning with a condition assessment by a multidisciplinary team that included the National Park Service, the University of Vermont, and design professionals specialized in adobe buildings.

Building stabilization took place in three main phases. The first phase, beginning in 2002, consisted of seismic and structural stabilization of the main ranch house, repair of wood floors, reconstruction of the two-story porches, and installation of a new roof covering on the ranch house, porches, and corredors. The second phase, which invloved the restoration of windows and doors in the ranch house, was completed in 2003. Seismic and structural stabilization of the carriage house was completed in 2004. Since then, the Las Flores project has focused on site improvements, interior finishes, fire safety systems, and landscape restoration.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Seismic Stabilization and Fire Protection

Safeguarding an Adobe Landmark Building

The Las Flores Adobe is located in an extremely active seismic zone (US Seismic Zone 4), and seismic stabilization of the buildings was one of the principal objectives. The ranch house and carriage house were stabilized (2002-2004) with retrofit designs that take advantage of the energy dissipation characteristics of thick adobe walls. To prevent overturning of the walls, lateral restraint was added to the existing construction using steel strapping, grouted pins, and plywood sheer panels. The seismic retrofit consists of two principal parts: anchorage of tensile elements along the tops of walls to provide out-of-plane support and resist separations and offsets of cracked sections, and attachment of the second-floor building frame in the Monterey block to perimeter walls to limit out-of-plane movement of the tallest of the walls.

Guard against earthquake damage with a seismic retrofit -

In addition to seismic stabilization, the Las Flores Adobe was retrofitted with an air-sampling smoke detection and a water-atomizing fire suppression system. Air-sampling systems provide early detection of smoke and can detect the products of combustion at very low levels. Water-atomizing fire suppression systems use approximately ten to fifteen percent of the water that traditional sprinkling systems do by dispersing water in a fine mist, which provides effective fire control while offering less risk to the integrity of the adobe walls, earthen and lime plasters, and building contents.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Damaged, Failing, and Missing Roofs

By the late 1990s, roof coverings were failing on both the house and the barn. Replacement of these coverings took place in 2002 and 2004, and included stabilization and repair of the existing roof framing, reconstruction of the missing corredor that connected the ranch house and the barn to the north, and replacement of asphalt shingles with cedar.

The existing roof framing and decking were significantly deteriorated by decay and termites. Framing was reinforced through the introduction of supplemental trusses. Following the repair of the existing roof frame and decking, a new roof covering of cedar shingles was installed. Where feasible, historic framing elements were repaired by scarfing in new wood to replace the deteriorated material. Where the missing corredor roof was reconstructed, connections were designed to permit independent movement of the two buildings in the event of an earthquake.

Protect and beautify with a roof that's built to last!

Roof Repair and Reconstruction

The cedar shingles, which are impregnated with a fire retardant treatment, were installed over a nylon mesh underlayment designed to provide continuous airflow between the solid decking and the wood shingles, eliminating excess moisture and preventing decay. The overall length and the amount of exposure on the shingles replicate an historic installation that was discovered in an attic space during stabilization. Stainless steel fasteners were used to install the new roof covering, as well as corrosion-resistant lead-coated flashings.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Revitalize your porch for rooms with a view!

The loss of the porches exposed the adobe walls to weather damage, particularly at their bases, and eliminated the lateral support needed for seismic stability.

Scaffolding was set for the installation of seismic retrofit elements prior to reconstruction of the porches.

The porches were reconstructed of old-growth Douglas fir to match the original construction. Above are the reconstructed porches just prior to the installation of handrails.

Above is an istoric image of the two-story Monterey block porch, taken about 1920. Images like this one provided valuable information during the rehabilitation of the porch.

Restoration of the **two-story Monterey block** porch

In the 1980s, the historic porches on the south, east, and west of the two-story Monterey block were demolished for safety reasons, which also removed roof and floor diaphragms that contributed to the seismic stability of the Monterey block, and exposed the adobe walls to weather damage. To achieve the project's seismic design goals, the porches were reconstructed based on numerous historic photographs and material evidence remaining from the original structures.

Old-growth Douglas fir matching the original porch was selected for reconstruction, along with upgraded footings and custom column stands designed to resist wind uplift. Porch woodwork was treated with a clear, penetrating intumescent or fire-retardant finish to reduce flame spread in the event of fire, leaving the wood wih a natural, "unfinished" appearance.

The enclosed porch on the north side of the Monterey block was disassembled in order to repair the wooden elements deteriorated by termites and decay. Beehives occupying the interior of the walls were removed, and the inner cavities of the repaired walls were covered in nylon netting to prevent a re-infestation. Because paint coatings on the historic redwood clapboards post-dated the period of significance, they were removed prior to the repair and reinstallation of the cladding. Supplemental clapboards were milled from salvaged old-growth stock that was detailed to match the historic material.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Restore and renew your wood doors for a beautiful entrance!

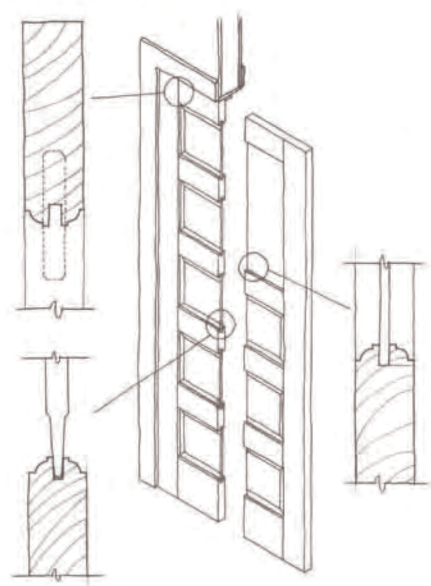
Paint Scheme Selection at Las Flores

The paint schemes for Las Flores windows and doors was selected based on analysis of historic paint finishes. On the exterior, the wine-red and off-white scheme adopted is consistent with historic photographs of the building taken in the 1930s. Interior color schemes vary by room, and are based on results of paint analysis, historic photographs, and the construction chronology assembled by the University team.

Conservation Strategies and Training

Restoration of most of the architectural millwork took place in 2003. Windows and doors were removed from the building and repaired in a wood shop. Student interns and NPS trainees studied under professional craftsmen and staff to learn repair techniques using traditional hand tool and machine processes.

In order to retain the maximum amount of historic fabric, only the portions of doors and windows that were irretrievably damaged were replaced, while moderately damaged elements were repaired using Dutchman splices and other traditional techniques. Window and door hardware includes items salvaged from the site, augmented by vintage pieces.



LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Charming paned windows bring in *light* and *warmth!*

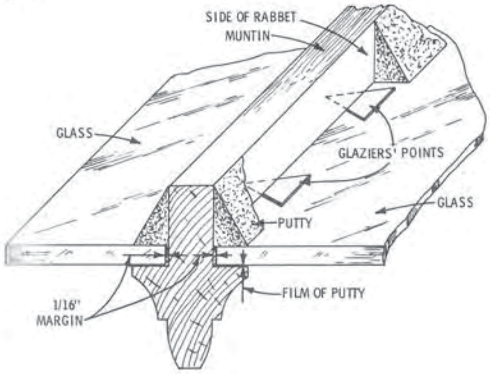
Missing and Damaged Windows

Windows at Las Flores were generally in poor condition, damaged or missing as the result of termite attack, decay, and vandalism. A systematic survey determined the extent and condition of the remaining fabric, joinery, sticking profiles, production technology, wood species, and surviving hardware. In cases where historic millwork no longer survived, jambs were examined for paint "ghosts", nailing patterns, hardware mortises, and other physical characteristics offering information regarding the missing woodwork.

Restoring Historic Millwork

Repairs to the millwork were made in a field school setting, which allowed participants became familiar with the various parts of a wood window sash, early production technologies, and methods for disassembly and integration of replacement parts. Hand tools were used to replicate sticking profiles and hand-planed surfaces in the earliest woodwork, while replacement parts for 20th century millwork were fabricated using machines.

Glazing of the doors and windows was accomplished using three types of glass. The oldest six-light sashes (c.1868) and their replacements were glazed with reproduction cylinder glass, more recent sashes (c.1918) were glazed with standard window glass, and laminated glass was used for all door lights.



LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

HISTORIC STUCCOS AND PLASTERS

Surviving historic finishes at Las Flores include lime stuccos, earthen plasters, limewashes, and period paints and other wall coverings. These finishes are an important part of the character and history of the Las Flores Adobe, and provisions for their conservation have been included in every phase of the building's stabilization.

Many of the exterior stuccos and interior plasters were badly deteriorated, and in some cases were replaced with cement-based coatings. Finishes conservation included removal of cement stuccos, repair of earthen and lime renders (including injecting lime grout behind delaminating plasters), and finishing with the traditional limewash.

The right finish makes all the difference!

CONSERVING PAINTS AND WALL COVERINGS

In 2003, an analysis of historic paints was begun to determine the colors and compositions of painted finishes used throughout the ranch house during the period of interpretation. Color-scheme options have now been determined for room interiors and many exterior features. Where painted finishes survive in sufficient quantity, they are being conserved. Where finishes have been lost, they are restored based on an historic scheme from the period of significance. Details of the historic scheme have been restored as accurately as possible, based on surviving finishes and historic photographs.

Two of the oldest rooms in the house have a unique whitewashed wall cloth made from strips of recycled muslin tacked to redwood paneling and covered with multiple layers of whitewash. This finish concealed the wood paneling and fasteners behind it, and likely gave the wall the appearance of being plastered. Conservation involved re-adhering the cloth where it was lifting from the redwood paneling, and consolidating the delicate whitewash.

Living in the space outdoors…

Courtyard, picket fence, and garden

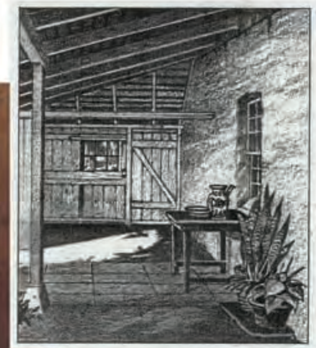
One of the most important goals of the Las Flores landscape rehabilitation was to recapture the essential surrounding historic landscape to more accurately reflect the period of significance and facilitate the interpretation of the site. The multi-phased rehabilitation has been based largely on evidence gathered from historic images such as those seen below and at left.

Water damage, burrowing rodents, and other pests

Landscape work at Las Flores has focused on the preservation of existing historic landscape features such as the 100+ year-old cactus located east of the *corredor* and the grapevine located west of the kitchen, along with the selective removal of invasive and non-contributing elements, like deer grass and New Zealand flax. An evergreen hedge was planted east of the house to re-define the historic courtyard boundary, replacing the historic cypress hedge that is prominent in many of the historic photos of Las Flores. The picket fence historically located around the southern portion of the house is being reconstructed in stages. A kitchen garden was historically located west of the house, which provided fruit, vegetables, and herbs for the household.

LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

Cliff May and the Western Ranch House



"Where there's room, let the house ramble"

Cliff May was a designer of ranch house developments in California in the mid-20th century, whose work had an enormous influence on the course of 20th century vernacular architecture. He is known as the father of the modern ranch house and is widely credited with popularizing the style.

A "total combination of indoor-outdoor space"

As a boy, May spent summers with his aunt Jane Magee at Las Flores, where he developed an appreciation for the long, low silhouette of the Hacienda block, wings that "ramble over the site" with many rooms strung together, roofs that are simple gables or sheds, and sunlit courtyards or patios beside covered walkways or 'corredors'. These forms are what inspired much of May's later work.

In 1946, the editors of Sunset Magazine published the first of two books in collaboration with May, *Sunset Western Ranch Houses*, which defined the ranch house style. This style came to epitomize the American ideal after World War II. May personally designed or built more than 1000 homes and commercial properties; his plans were used in the construction of more than 18,000 ranch-style tract houses, and whole neighborhoods are based on the design principles developed in the Sunset publications (the Ranchos in Long Beach, and Harvey Park in Denver, for example).

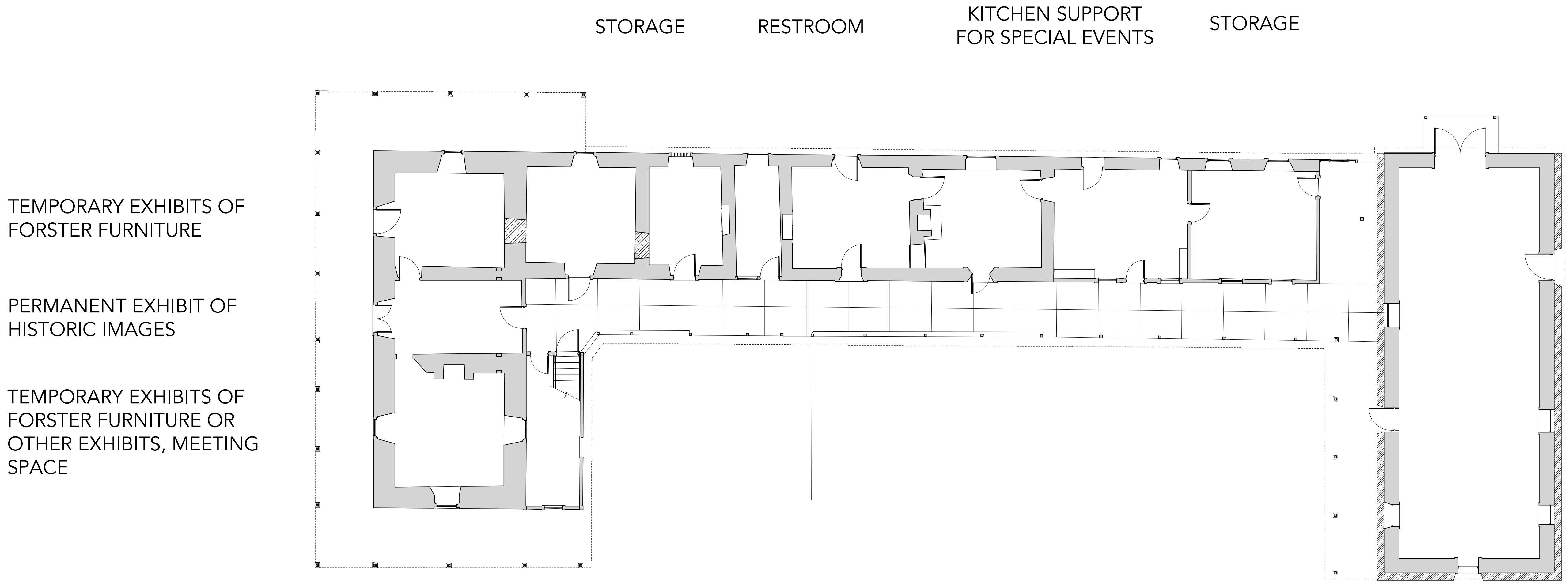
LAS FLORES ADOBE
NATIONAL HISTORIC LANDMARK
Camp Pendleton, California

APPENDIX C: TALKING POINTS, DOCENT LED TOURS

DOCENT LED TOURS

This section should be used as a reference for docent led and other guided tours of the property, and includes a first floor plan of the house with proposed uses of interior spaces (the second floor of the house would generally be off-limits to visitors). This section also includes an excerpt detailing the historical background of the site from the Statement of Significance section of the National Register Nomination form for Las Flores.[1] The pages from the National Register form should be used in docents' explanation of the history of the site. This information could also be abbreviated and included as a pamphlet to supplement self-guided tours of the property.

[1] Wee and Mikesell. National Register Nomination for Las Flores Adobe, Camp Pendleton, San Diego County, California, Sect. 8.



LAS FLORES ADOBE - **FIRST FLOOR PLAN**

SCALE: 1/16" = 1'-0"

Summary Paragraph, Statement of Significance[2]

The Las Flores Adobe is eligible for listing in the National Register of historic Places at the National level of significance in the area of architecture (National Historic Landmark Criterion 4 and National Register significance Criterion C), as an exceptionally good example of the California Ranch House (persistence of ranchero lifestyle to 1880s) and in the area of social history (National Historic Landmark Criterion 1 and National Register Criterion A) as an important and late example of the unique ranchero culture and economy that developed in California during the middle decades of the 19th century. The period of significance at the National level is 1868 to 1888. The property also appears to be eligible at the local level of significance in the area of agriculture (National Register Criterion A), as the headquarters of a locally-important lima bean farm. The period of significance at the local level is from 1888 to 1941. The integrity for this property is good.

In order to place the Las Flores Adobe in historic context a narrative history is provided below, followed by conclusions on the significance of the adobe in California social history and architectural history.[3]

Historical Background

When the Spanish first arrived in Alta California, the Luiseño Indians inhabited the coastal region in what is now north San Diego and south Orange counties. The founding of Mission San Juan Capistrano in 1776 brought the Luiseños into the Hispanic sphere of influence. After the establishment of Mission San Luis Rey in 1798, the Las Flores *rancherias* came under the jurisdiction of San Luis Rey. Father Antonio Peyri adopted a policy of allowing the Indians to remain in their villages. Instead of uprooting the native population to a central location at the mission site, Peyri founded mission outposts or ranchos near Indian *rancherias*. Permanent Spanish occupation of the Las Flores region dates to the construction of Rancho Sao Pedro in

[2] Ibid.

[3] Significance conclusions are not included as part of this excerpt.

1823, one of four ranch outposts attached to Mission San Luis Rey. Located on the trail from San Luis Rey to San Juan Capistrano, the outpost grew in importance both as a ranch and as a resting place for travelers journeying between the missions. By 1827 Father Peyri reported to his superiors that he had established an *estancia* at Las Flores with a residence, granaries, and a chapel arranged in the form of a square and overlooking the ocean. The site was about 15 miles northwest of Mission San Luis Rey and about one mile distant from the mission cattle pastures at Las Pulgas.[4] After the liberal-minded governor, Jose Figueroa, instituted the break-up of the missions with his secularization order in 1834, the Mexican government established one of four experimental *pueblos libres* (free pueblo) at Las Flores. Indians from the Las Flores *rancherias* continued to occupy village land at least into the 1870s, but the village was self-governed by the resident Indians only until 1844 when Pio and Andres Pico, owners of the adjacent rancho, purchased the village and its deteriorating buildings from Indian leaders representing the village.[5]

During the Spanish Period (1774-1822), Alta California's rancheros were economically put at a great disadvantage by Spain's closed mercantile system. Spain required that all trade be conducted solely within the empire, thus prohibiting foreigners from interacting with her colonies. Following Mexican independence from Spain in 1821, the Mexican government ended the closed Spanish mercantilist system and instituted a form of limited free trade. Under the guidance of Mexican Governor Luis Arguello a five point program emerged to establish the foundations of a republican order in the California territory. It provided for civil government, mission secularization, land grants, Indian emancipation, and trade development. With this program the new leaders set the course of California development during Mexican rule.

The new Mexican open trade policy served the dual purpose of producing revenues for the

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[4] Fr. Zephrin Engelhart, *San Luis Rey* (1921), 39-41, 50-53; Schaeffer, Jerry. Draft: "Las Flores Nomination," 1991.

[5] Transcript of the Proceedings in Case 700: Pio Pico v. The United States for the Place Named Santa Margarita and Las Flores. Records of the Ninth Circuit Court, Bancroft Library, University of California, Berkeley.

government and encouraging agricultural development to enhance the nation's wealth. Monterey and San Diego were designated as ports of entry for all ships where duties were imposed. In June of 1822, the British ship *John Begg* arrived at Monterey and British merchants William Hartnell and Hugh McColloch proposed a trade venture to Governor Pablo Vicente de Sola and Father Mariano Payeras, prefect of the missions. The merchants proposed to exchange European hides and tallow for South American and Asian manufactured goods and luxuries through company middle men who would contact the missions and rancheros, buy their products and arrange for purchases from sea captains. Other foreign traders quickly appeared on the scene, led by William Gale, agent for a Boston firm, and John Cooper, a Boston sea captain. Hartnell and Cooper were the first of the resident merchants, who became the middle men in conducting the California trading ventures.

During the 1820s, the number of ranchos increased only slightly, mostly because few additional land grants were authorized. The missions remained the largest commercial producers of the period, enjoying the best access to ports and usufructuary title to millions of acres of range land along the settled coastal strip extending from San Diego to Sonoma. Territory alone did not account for the mission's economic dominance. Throughout the 1820s and early 1830s, the Franciscans controlled an organized labor force comprised of hundreds of Christianized Indians. The scale of the missions' production was substantial and each mission possessed flocks and herds numbering in the thousands. The Mission of San Luis Rey, for example, reported in 1822 owning 500 horses, 150 mules, 12,000 cattle, and 20,500 sheep. The lands belonging to San Luis Rey stretched 35 miles from north to south and 45 miles from east to west of the mission site.[6]

As the trade and connection to world markets revolutionized ranchero life, settlers in Alta California and interested parties in Mexico intensified their lobbying efforts for mission secularization. A group of native sons filled with libertarian republican ideas gained increasing

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[6] Engelhardt, *San Luis Rey Mission* (1921), 41, 218-22. Hubert H. Bancroft, *California Pastoral*, 1769-1848 (1888); Irving B. Richman, *California under Spain and Mexico* (191 l); Leonard Pitt, *The Decline of the Californios: A Social History of the Spanish-Speaking Californians.* 1846-1890, (1966), 1-25.

strength in California affairs. Prominent among these were: Mariano Vallejo of Sonoma, Jose Castro of San Jose, Juan Bautista Alvarado of Monterey, Jose de la Guerra of Santa Barbara, Jose Carillo of Los Angeles, and Juan Bandini and Andres and Pio Pico of San Diego. Sons of presidio officers, occupied in agrarian or mercantile enterprises, they combined an intense pride in their Spanish-California heritage, with an active interest in local and provincial politics, and a strong desire to own ranchos. At the heart of their agenda was the secularization of the missions so that their land could be allocated to emancipated Indians and to prospective rancheros such as themselves. Through the *diputacion*. the local legislative body in Alta California, these young Californios came to assume leadership in California's political economy.

Allied with these ranchero-politicos were the newly arrived American and British merchants, who had come by sea and settled in the villages to become prominent local figures. Included in this group were the pioneer Anglo businessmen in their respective communities: Henry Fitch in San Diego; Abel Stearns, with his young protégé John Forster, in Los Angeles; William Dana and Alfred Robinson in Santa Barbara; Cooper, Hartnell, and Larkin in Monterey; and Nathan Spear in San Francisco. Each of these merchants, save Larkin, merged with the Hispanic rancheros by act ing as their business agents, marrying their sisters and daughters, becoming naturalized citizens (which required embracing Catholicism and promising to obey Mexican law), and acquiring ranchos, either as land grants from the Mexican government or through marriage partitions. Through these common ties of friendship, marriage, and business, the resident Anglo merchants became a part of the ruling elite in Mexican California.[7]

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[7] Several published works deal with the politics of secularization and the role of the foreign traders in Mexican California, among the more notable books and articles are: Alan C. Hutchinson, "The Mexican Government and the Mission Indians of Upper California," *The Americas* 21 (April 1965); David J. Weber, *The Mexican Frontier, 1821-1846: The American Southwest Under Mexico* (1982); Raymond K. Morrison, "Luis Antonio Arguello: First Mexican Governor of California," *Journal of the West* 2 (April / July 1963); John A. Hawgood, "The Pattern of Yankee Infiltration in Mexican California, 1821-1846," *Pacific Historical Review* 27 (February 1958); Pitt, 1966; Gloria E. Miranda, "Gente de Razon Marriage Patterns in Spanish and Mexican California: A Case Study of Santa Barbara and Los Angeles," Southern California Quarterly 47 (Spring 1981).

The turning point in Mexican California politics came with the appointment of liberal-minded Jose Figueroa (1833-1835) as governor. Working closely with the *diputacion*, he initiated a series of liberal programs including the long-delayed breakup of the missions, secularizing almost half of them. Between 1836 and 1842 major political upheavals in Mexico left the national government with little will to impose its rule on California. Figueroa's successor as governor, Juan Bautista Alvarado, the first native Californian to be constitutional governor, completed the legal framework for carrying out the liberal reforms Figueroa put into effect. Working with the *diputacion*, he pressed for economic development by completing mission secularization, distributing mission and other land to Indians and prospective rancheros, and promoting foreign trade. Thus, by the late 1830s the villages and ranchos became the dominant economic institutions in Mexican California. The ranchos became the chief producing centers. The villages emerged as marketplaces for the expanding trade that developed from the growth of neighboring ranchos and local commercial activity. Trade focused at first on the rancho-produced cattle hides and tallow, and later horses, crops, lumber and other products were also exchanged for imported manufactured goods. The trade was mostly conducted under the auspices of the naturalized Anglo and Mexican merchants. Thus California's native and adopted sons took the initiative in the economic development of the province.[8]

Once the new land policy was implemented, the economic, political, and cultural transition of California was reshaped from a military-clerical order to a civic republican community. Though many mestizo ex-soldiers from the dismantled and decaying presidios received small grants, most of the land fell to a few influential families. In the half-century between the early Spanish land grants (1784) and mission secularization (1834), only about 50 land grants had been issued to prospective rancheros. The new land policies were so liberal that Mexican governors issued more than 750 grants to private claimants in the 13 years between the Secularization Act and

[8] Walton Bean and James J. Rawls, *California: An Interpretive History* (1983), 48-55; Woodrow James Hansen, *The Search for Authority in California* (1960).

the American conquest. They ranged in size from 1 to 11 square leagues (a league equaled 4,440 acres). Some socially and politically prominent grantees, like members of the Vallejo, de la Guerra, Castro, Alvarado, Pacheco, and Pico families, were awarded multiple holdings. At 700,000 acres of rancho grant lands, the Pico family had the largest such holdings. Although such grants were generous even by Mexican standards, the policy of distributing large grants in isolated frontier provinces, where land values were low and settlers few, was a common feature of Mexican national land policy in its northern provinces of New Mexico, Texas, and California.[9]

The distribution of these grant lands set the pattern for the rancho movement. The governor issued grants rather generously on petition of a respective ranchero, who was expected to build his home, acquire stock, and cultivate crops. Politicians, who were or had been active in the territorial *diputacion*, the village *ayuntamientos*, or other government posts, secured sizable grants for themselves and their families. A number of grants were issued to naturalized citizens, including American traders, trappers, resident merchants, and later pioneer farmers. Administrators charged with disposing mission lands, including commissioners who allocated the lands and *mayordomos* who managed the remaining mission property, were often local rancheros, who frequently assigned large land tracts, complete with an Indian labor force and mission improvements, to themselves, to relatives, and to friends.

A total of 31 land grants issued in San Diego County were confirmed by the Ninth Circuit Court under the Land Act of 1851. Of these, only seven had been approved prior to secularization. Most were granted in the last six years of Mexican rule. During his term as governor from 1840 to 1842, Juan B. Alvarado issued 13 grants in San Diego County; of these 8 were confirmed totaling about 222,300 acres. His successor, Manual Micheltorena issued 5 grants in the years 1843-44, but they were relatively small in size amounting to 61,420 acres. The last Mexican Governor, Pio Pico, issued papers for about two dozen land grants, some after his term as

[9] David I. Weber, *The Mexican Frontier, 1821-1846: The American Southwest Under Mexico* (1982), 190-206; W. W. Robinson, *Land in California* (1948); and William H. Ellison, *A Self -Governing Dominion: California 1849 - 1860* (1950).

governor had expired. Eventually 14 grants approved by Pio Pico in 1845-46 were confirmed in San Diego County for a total of 241,991 acres.[10]

A son of a sergeant of the guard, Jose Maria Pico, Pio (1801 -1894) grew up at the Mission San Gabriel and the presidio of San Diego where his father was stationed. After his father's death in 1819, Pio as the eldest son living at home, supported his mother and seven brothers and sisters by opening a small general store that stocked groceries, liquors, furniture and clothing. As business expanded he hired a clerk and made frequent trips to Baja California to barter for merchandise and livestock. By 1824 Pio had saved enough money that he and his younger brother Andres could build an adobe home for the family below presidio hill. A protégé of San Diego politician Juan Bandini, Pio began his political career in I 826 with his appointment as San Diego's deputy in the *diputacion*. He soon gained notoriety as an outspoken proponent for southern California in its political rivalry with the north. In 1831 Pio Pico entered the ranchero class when he received his first land grant for the Jamul Rancho, an 8,926 acre grant southeast of San Diego. Following the ouster of the reactionary Governor Manuel Victoria in 1832, Pico, now a leader in the ranchero-politico revolt, was appointed governor by the provincial *diputacion* for a period of 20 days until the arrival of a new governor. The successful revolution, followed by the governorship, put Pico well on the road to political influence. His social ties to the California elite were further cemented in 1834 by his marriage to Maria Ignacia Alvarado, daughter of Francisco Javier Alvarado and Maria Ignacia Amador.[11]

Seizing his opportunities during the ensuing decade, Pico became an extremely wealthy man, property he acquired by, land grants from various Mexican governors and as administrator of the territory's richest mission, San Luis Rey. Mission San Luis Rey was secularized in 1834. In April of the following year, Pio Pico received an appointment from Governor Figueroa as its

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[10] Warren A. Beck and Ynez D. Haase, *Historical Atlas of California* (1974), 39.

[11] Helen Tyler, "The Family of Pico," *Historical Society of Southern California Quarterly* 35:3 (September 1953), 22 1-237; Arthur Botello, trans., *Don Pio Pico's Historical Narrative* (1973), 19-33.

administrator, a post he held until 1840. In February of 1836 Pico petitioned the governor and the *diputacion* for the San Onofre land grant located between Las Flores and San Juan Capistrano. While his petition was pending, he secured permission from Governor Gutierres to occupy the ex-mission lands with his livestock. A few years later, Pico acquired the Temecula Grant, but Indians living in the region opposed the grant. On February 22, 1841 Pio and Andres Pico appealed to the prefect of the 2nd District to exchange their Temecula Grant for lands at Santa Margarita. The Pico's declared that the old mission grazing lands at Santa Margarita were uninhabited and unused except by their own stock. Further, since the Picos had been in exclusive use of the San Onofre range since March of 1836, they requested that the border of the rancho be extended to the north to incorporate these lands as well. From Los Angeles Santiago Arguello wrote to the prefect of the 2nd District that in light of Picas' willingness to give up Rancho Temecula, the grant of Santa Margarita y San Onofre should be made. However, he noted that the proposed boundary of the grant must be altered because it included within its limits the Indian village of Las Flores.[12]

On May 10, 1841 Governor Juan B. Alvarado granted to Andres and Pio Pico a 89,742 acre tract known as the Rancho San Onofre y Santa Maria. The original grant surrounded the Las Flores village on three sides. It extended from northern San Diego County into southern Orange County and was bounded on the east by a ridge separating it from the Valley of Temecula, on the south by the reserved lands of Mission San Luis Rey, on the west by the Pacific Ocean, and on the north by territory controlled by Mission San Juan Capistrano. In July 1843 the Picos obtained a certificate from Alcalde Taburcio Tapia, of Los Angeles, bearing the consent of Governor Micheltorena to transfer the 1.5 square league Las Flores village to the Picos. The following year the Pico brothers took possession of the Las Flores property from the Indians, and their combined holdings became known as Rancho Santa Margarita y Las Flores. John Forster, Pico's brother-in-law, later added part of his rancho holdings to the grant making the

[12] Bortello, Pio Pico, 65-98; Deposition of Santiago Arguello, in Transcript of the Proceedings… *Pio Pico v. United States* (1853).

tract a total of 133,440 acres. The U. S. Land Commission confirmed the grant on April 24, 1855.[13]

The acquisition of former mission lands and the vast cattle herds that once belonged to the mission, allowed Pico to enter into the lucrative hide and tallow trade. The prevalence of Indian hostilities led to the abandonment of many ranchos in the San Diego region in the later 1830s and early 1840s. It appears, however, that the Picos were able to carry on their cattle business at Santa Margarita throughout the period. Pio appointed his brother Jose Antonio Pico, once administrator of the Mission of San Diego, as *mayordomo* in 1843 and he lived on the Santa Margarita until his death in October 1871.[14] Jose stocked the Santa Margarita with horses and cattle for Pio Pico and established a home for himself and his wife Dona Magdelena Baca, and their 8 children. He resided at the *pueblito* in Santa Margarita Valley.[15] Subsequent to the purchase of Las Flores village by the Picos in 1844, during certain seasons of the year Jose and other members of the Pico family occupied the old *estancia* buildings, especially when rodeos were held at Las Flores or on other occasions when large numbers of cattle were collected together in the Las Pulgas region. The Picos also sowed fields of grain at Las Flores, but there is no evidence that they erected any additional structures at the site. The Pico's [sic] built their main adobe ranch house in 1842 at the site of the old mission vineyards in the hills overlooking Santa Margarita River. Juan Ortega, Pio Pico's brother-in-law, who was in charge of Andres' cattle and gardens, lived at the Santa Margarita adobe.[16]

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[13] Van Nostrand 1943: 175; Deposition of John Forster, in Transcript of the Proceedings… *Pio Pico v. United States* (1853).

[14] Transcript on Appeal, Forster v. Pico. California State Supreme Court, Case No. 3922 (1873). Records of the California State Supreme Court, California State Archives, Sacramento.

[15] In 1860 Jose Antonio lived at the rancho with his wife Dona Magdalena, a native of Santa Fe, New Mexico, and 8 of their 10 children. U. S. Manuscript Census Schedules, Population: San Diego County, 1860, 24-25.

[16] Testimony of Santiago Arguello, Transcript of the Proceedings *Pio Pico v. United States* (1853 -1855); Transcript on Appeal, *Forster v. Pico*, California State Supreme Court, Case No. 3953 (September 10, 1873), 45. Records of the California State Supreme Court, California State Archives, Sacramento.

Following the War of 1846, and up until the Civil War, Californios (the Spanish-speaking inhabitants of California) experienced a decline in economic status, political power, and social influence. The American military invasion cut short Pico's term as governor. In August 1846, Pico with the assistance of John Forster fled from Alta California to Mexico City to seek men and money from the Mexican government to fight the American forces in California. His government refused to assist him, and Pico lived in exile in Sonora until 1848 when he was granted freedom from persecution by Military Governor John C. Fremont. When Pio returned to California, he took up temporary residence for six months at the Santa Margarita ranch. Then in February 1849 Pico bought the Los Coyotes Rancho in Los Angeles and established his primary residence there leaving the ranch at Santa Margarita in the hands of his brother and brother-in-law.

Pio Pico's huge landed estate gained during the waning years of Mexican rule allowed him to prosper during the early 1850s. He served as a city councilman and used his wealth and influence to develop the townsite of Los Angeles, and its banking and educational institutions. In 1850 Pico bought the 9,000 acre Paso de Bartolo land grant and constructed a U-shaped two-story adobe residence "El Ranchito" overlooking the San Gabriel River. However, by the early 1860s, even though Pio was in possession of large, well-stocked ranchos, he was chronically short of cash and unable to pay interest on his debts.[17]

During the high tide of the hide and tallow trade from 1831 to 1849, rancheros turned their hitherto subsistence ranchos into more efficient production units by relying on a varied labor force including their offspring and relatives, Mexican-Californian vaqueros, hired mestizos (Mexican laborers from nearby villages), and ex-mission Indians. The War between Mexico and the United States (1846-1848) brought about a drastic change in rancho life. The hide and tallow trade came to a close and rancheros became absorbed in fighting the invading United States troops. Almost before the war ended, the gold rush began. The gold rush was a temporary economic boom for the Mexican rancheros who transformed their cattle operations from the

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[17] Katherine Sheehey, "The Last Governor of Mexican California," *Desert* 41:1 I (November 1978), 28-31.

old hide and tallow trade to supplying beef on the hoof to hungry miners and the growing northern towns.

The large land holdings of the Californios and the boom in the cattle trade during the gold rush have caused many historians to believe that the Californios throughout southern California were quite wealthy. But as historian Robert Glass Cleland notes in his book Cattle on a Thousand Hills, the golden age of ranching lasted only until about 1856. The flood of immigrants arriving in California after 1848 sent cattle prices skyrocketing as the demand for beef increased. Cattle that once brought only a few dollars, by early 1849 were worth fifty dollars a head and for a while sold for ten times that amount in some mining camps. For seven prosperous years, southern California ranchers drove their herds along the coast or through the San Joaquin Valley to the markets in northern California. During these years rancheros took between 25,000 to 35,000 cattle annually out of Los Angeles alone to northern markets. By 1855 the demand for southern California cattle began to decrease as a growing number of sheep from New Mexico and cattle from the Middle West reached the California market. In 1848 California had only about 20,000 sheep and 300,000 cattle, but by 1860 the state possessed one million sheep and three million cattle. As the market became saturated, prices declined to about five to six dollars per head. By the summer of 1861, the large rancheros in southern California, including Anglo rancheros like Abel Stearns and John Temple, had no recourse but to slaughter their cattle and make what profits they could from the sale of hides, tallow, and dried beef.[18] (A series of drought years compounded the ranchero's problems as the rolling hills where they grazed their cattle turned brown and the creeks where they obtained their water dried up.)

Many California rancheros were unable to withstand the formidable litany of assaults to their property and lifestyle. The period from 1848 to 1880 was a difficult time of transition for Mexican rancheros in California. Litigation costs in defense of land claims, high interest rates, short-term

[18] Robert Glass Cleland, *The Cattle on a Thousand Hills: Southern California. 1850-1880* (1941), 102-111; Henry B. Lynch, *Rainfall and Stream Run-off in Southern California since 1769* (1931), 13.

mortgages secured by property far in excess of the value of the loans, and deficiency judgments began to strip even the wealthiest and most prominent native California families of their landed estates. At the end of the Mexican period, Pio Pico and his brother Andres were among the largest landowners in southern California. During the fifties and sixties the Pico brothers mortgaged their large land holdings, including Rancho Santa Margarita y Las Flores in which they each held one-half interest. Andres had fallen deeply into debt by 1862. Fearing foreclosure and a deficiency judgment against the rancho, Andres deeded outright his half interest to Pio. At the time the deed was given, Pioche & Bayerque, San Francisco bankers, held a mortgage on the Santa Margarita for some $44,000, bearing interest at 3% per month. The mortgage holders demanded payment of the debt, but Pio could not raise the money. To protect his other substantial holdings from a deficiency judgment, he offered to deed the ranch and 5,000 head of stock in exchange for the note. Pioche and Bayerque refused; they wanted cash. At great risk to his own solvency, John Forster assumed his brother-in-law's indebtedness in exchange for the deed to the Santa Margarita Ranch and a bill of sale for 1500 cattle and 140 horses.[19]

Of all the children of Jose Maria Pico, only Dona Ysidora married outside her race. A genuine friendship existed between her husband John Forster and Pio Pico, Ysidora's older brother.[20] The two men were tied together not only by marriage, but through religion, as Pio became Forster's godfather when he was baptized into the Catholic church. As governor, Pio Pico arranged for the sale of Mission San Juan Capistrano to Forster and helped him acquire four other ranchos in Orange and San Diego counties either through intermediaries or by granting land directly to Forster. Like many other foreigners who became permanent residents of Alta California during the Mexican Period, Forster joined together with the native sons of the military

[19] Terry E. Stephenson, "Forster V. Pico: A Forgotten California Cause Celebre," *Southern California Quarterly* 17 (1935), 144-47.

[20] Transcript on Appeal, *Forster v. Pico,* Forster to Pio Pico, May 10, 1872. California State Supreme Court, Case No. 3922 (August 21, 1873).

to form the new ranchero-mercantile elite. John Forster is symbolic of those foreigners who fully integrated into the dominant Hispanic culture by adopting Catholicism as his religion, becoming a Mexican citizen, marrying into an old established family, and living the lifestyle of the ranchero.

Born in Liverpool, England on September 16, 1814, Forster lived with his parents until 1830. At age 16, he left England on the brig *Roselle* for Valparaiso, Chile enroute to Guaymas, where his uncle, James Johnson, was a merchant captain for the firm Johnson and Aquirre. He remained with his uncle in Guaymas for more than two years. In 1833, Forster came to California with his uncle aboard the *Facio* carrying a cargo of goods from China. While Johnson remained in California, Forster commanded the *Facio* on its return trip to Guaymas, turned it over to his uncle's partner, Jose Antonio Aguirre, and in the summer of 1833 returned to Los Angeles. He settled for a short period on a ranch near Los Angeles purchased by his uncle from Don Manuel Gutierrez.

In 1834 Forster began a business venture trading seal skins, but soon gave up his efforts to assist Abel Stearns in setting up a warehouse and a general store at the harbor of San Pedro where rancheros could exchange their hides, tallow and other products of the country for miscellaneous items and imported goods. A successful merchant, Forster's position in Mexican California society was further enhanced by his marriage in 1837 to Ysidora Pico at Mission San Luis Rey. In 1839 the Forster's purchased an adobe on the site of the old Los Angeles county courthouse. There the first of their nine children, Marcus, was born on October 7, 1839. In the summer of 1840, Forster took charge of the Casa de Sao Pedro for Stearns and oversaw all receiving and shipping business at the port for the next four years. Governor Manuel Micheltorena appointed him to the official position of Captain of the Port of San Pedro on March 14, 1843. One year later Forster moved with his family to San Juan Capistrano where he followed the footsteps of Stearns into the landed gentry of California as a ranchero, assuming the title "Don Juan."[21]

Five months after Pio Pico assumed the governorship in 1845, he appointed his brother-in-law to the position of *mayordomo* of Mission San Juan Capistrano. Forster also took control of the vast grazing lands east of the mission on Augustin Olivera's 46,400 acre Rancho La Paz (also known as Rancho Mission Viejo). Governor Pio Pico had granted Olivera title in April 1845; shortly thereafter, Forster purchased the property. Under a similar arrangement, Forster purchased the adjoining Rancho Trabuco, consisting of two square leagues, from Santiago Arguello, a brother of the second Mexican governor of California. Governor Pio Pico granted Forster an additional three-square leagues on April 21, 1846 thereby increasing the size of the Trabuco Grant to 22,184 acres. In December 1845, Forster received another grant of 26,632 acres directly from his brother-in-law for the *Rancho de la Nacion* in the vicinity of present day Chula Vista and National City. A short time later, Forster acquired the Rancho Valle de San Filipe, a grant of nearly 10,000 acres east of Julian that Governor Pico had given to Filipe Castillo, an Indian, on May 30, 1846.[22]

Forster managed his four ranchos of over 100,000 acres, from his home at the old mission grounds of San Juan Capistrano, where he served as justice of the peace under Mexican and American rule. In October 1845 Governor Pico declared the property of various missions open for sale by public auction under the pretense that the money was needed to repel the invading Americans. Forster and James McKinley purchased at auction the Mission San Juan Capistrano main building and three gardens from the Mexican government for $710 partly payable in hides and tallow.[23] San Juan Capistrano remained the home of Forster and his family until he moved to Rancho Santa Margarita y Las Flores in April 1865.

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[21] John Douglas Tanner, "Pioneer Data from 1832 from the Memory of Don Juan Forster," Bancroft Library MS, 1878; Maurice H. and Marco R. Newmark, *Sixty Years in California*, 1853-1913 (1970), 173; Doris Marion Wright, *A Yankee in Mexican California: Abel Stearns. 1798-1848.* (1977), 39-47; Tanner and Lathrop (1970), 195-230.

[22] Ogden Hoffman, Reports of Land Cases Determined in the United States District Court (1862), Appendix 54-63.

[23] Engelhart (1922), 157.

Thus, by the period of American annexation, Juan Forster had become one of the largest landowners of foreign birth in Southern California, second perhaps only to Abel Stearns. However, as with every ranchero in southern California between the 1850s and 1880s, prolonged legal struggles, usurious interest rates, exorbitant taxes on "unimproved" land, spendthrift practices, a series of devastating natural disasters, and the decline of the once lucrative beef market eventually engulfed Forster. All but one of his land grants was ultimately confirmed, but by the 1870s, Forster had been forced to sell all or part of his San Felipe, La Nacion, Trabuco, and La Paz ranchos to moneylenders and land speculators. To prevent seizure of the Santa Margarita in 1864, Forster acquired a deed to the rancho from Pio Pico and then went to San Francisco where he settled his brother-in-laws delinquent debt of $44,000 to Pioche & Bayerque on a $110,000 loan. To remain solvent himself, Forster had to take out new promissory notes totaling $59,000, at two percent per month.[24]

Winter floods in 1862 were followed by a series of drought years between 1863 and 1865. The combination of flood and drought decimated the pastoral economy. Forster lost half his livestock. In one rainstorm on May 5, 1864, he lost over 300 head of cattle from exposure because of their weakened condition. Cave J. Couts, who owned the neighboring Rancho Guajome, noted that Forster had paid a terribly high price in 1864 for the Santa Margarita. Because of the depressed cattle market, Couts valued the ranch at less than $30,000. Cattle on the Santa Margarita Ranch were starving faster than vaqueros could strip the hides from them and good hides were selling for only $2.50, less the cost of taking the hide.[25] To further complicate matters for Forster, in 1864 the U.S. government ruled that the sale of Mission San Juan Capistrano had been illegal and ordered it returned to the Catholic Church. Forced to leave San Juan Capistrano, on April 8, 1865 Forster ordered Joaquin Ortega, Pio Pico's brother-

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[24] James M Jensen, "John Forster A California Ranchero," *The California Historical Society Quarterly* 48:1 (March 1969), 42.

[25] Terry E. Stephenson, "*Forster v. Pico*: A Forgotten California Cause Celebre," Southern California Quarterly 17 (July 1935), 66-67; Herbert Couch, "Reminiscence," (1915), MS No. 5039, Bancroft Library.

in-law, to vacate the Santa Margarita ranch house. Forster moved his family and livestock to his newly acquired rancho. For the next seventeen years, the old Pico ranch house overlooking the Santa Margarita River became the primary residence of the Forster family and the center of business operations for one of the largest cattle ranches in southern California.[26]

The rancho economy had proven to be the controlling factor that gave form and shape to Hispanic California society during the Mexican Period. The well being of the ranchero culture ultimately depended upon how much land might be inherited from generation to generation. In the northern part of the state the original estates had been checkered with settlers, and it was rare that a viable rancho was transmitted from father to son by the 1860s. Southern California experienced the same phenomena, but somewhat later and over a longer period of time. Islands of ranchos remained intact until the arrival of the railroad and the great land boom. The promise of commercial and real estate developments, interfered with rancho supremacy, but until the great boom of the 1880s Spanish conversation, adobe architecture, and traditional clothing, social events, and customs persisted among the embattled rancheros. The rancho legacy on the Santa Margarita was not easily brushed aside.

Although events in the middle decades of the 19th century abruptly changed the political allegiance of the owners and occupants of the ranchos, cultural change progressed more deliberately. Pride in traditions, inheritance, and race assured that Mexican ranchero customs, traditions, and beliefs would continue to prevail on the southern coastal ranchos. Most rancheros lived a comfortable, leisurely existence that was abundant in basic necessities, but sparing in luxury. Despite their austere habits, they were noted for their intense preoccupation with gambling and sports. Life on these isolated ranchos was enlivened by fiestas, colorful open-house affairs for celebrating family events and Church and national holidays. Livestock was important to the way of life, as well as a thriving industry for the rancho. The periodic

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[26] Transcript on Appeal, *Forster v. Pico,* Foster to Pio Pico, May 10, 1872. California State Supreme Court, Case No. 3922 (August 2 1, 1873).

roundups of cattle (rodeos) and horses (*recogidas*) remained the major highlights of rancho life well into the American period. The rodeos were held twice a year, one in late summer for counting and branding cattle and the other in late spring for collecting the animals into droves for the long drive up the San Joaquin Valley to the San Francisco market. Old Spanish traditions of music, dancing the fandango, fiestas, rodeos, horse racing and hospitality remained integral parts of rancho life on the Santa Margarita.[27]

The romantic image of the gracious lifestyle of elite rancheros was still strongly reflected in the accounts of travelers and chroniclers of the West who visited the Santa Margarita Ranch in the late 1870s. The journalist Charles Nordoff, who visited the Santa Margarita Rancho in 1872, commented that at Don Juan Forster's ranch "more of the old Spanish Californian life remains than at any other I have visited. Spanish only is spoken in the family, and the old customs are kept up, not from any desire to be different from others, but because they are family habits."[28] John Clay's perception of life on the Santa Margarita also suggests that the Forster's embraced more than just the outward forms of Spanish culture. Clay, a cattleman from the Rocky Mountain region who was interested in purchasing the Santa Margarita Ranch, first met Don Juan Forster in 1879 and succinctly described him as "half English, half Mexican." With an air of Yankee moral superiority, Clay noted that the ranchero cultural traditions in the Forster family had been sustained through the second generation. Of Juan's eldest son, Marcus, Clay commented that he was "more Spanish than Anglo Saxon, a fine looking man, well built, with eyes of fire and all dash of a Spanish cavalier, but evidently of poor business ability. No thought of the morrow." Clay painted a picture of the Santa Margarita as a pleasant landscape, where good climate, ample land, cheap Indian labor, and a contented gentry perpetuated the pastoral traditions of the "halycon days" of the dons in Mexican California. But the frontier-pastoral past was on the verge of succumbing to the symbol of Anglo capitalism -- the railroad.

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[27] Pitt (1966), 1-25, 104-120; Frederick A. Sanchez, "Rancho Life In Alta California," *Masterkey 60* (Summer/Fall 1986), 15-25.

[28] Nordhoff, Charles. *California: for Health, Pleasure, and Residence*. (1876), 240-242.

> Leaving San Juan Capistrano, we reached Las Flores where Juan Foster [sic] made his home. It was on the sea coast and, as I remember, on the north corner of the ranch. There we had a lavish lunch and we reached the home ranch in the early evening. It stood on the banks of the Santa Margarita River. The house was built on the old Mexican method… …There seemed an endless lot of help round the ranch, whether servants, retainers, or amigos it was impossible to tell. You were in the land of Ramona, amid simple people with a lot of Indian blood in their veins. Dame Foster [sic] who joined us at supper had a finely cut profile, but dried up like most old women in that climate. The young senoritas who helped at table and round the house were exceedingly good looking, but shy with strangers. You were back in medieval days, except for the whistle of the locomotive and the silent forward movement that began in 1848 and '49 to push the native out of his heritage in this fair state.[29]

Juan and Ysidora Forster were well-known throughout the San Diego region as generous and magnificent entertainers in the old tradition. Upon Juan's death in 1882, the editor of the San Diego Union lamented the symbolic passage of a bygone era: "Don Juan was almost the last of the great rancheros of the olden time, and up to the day of his death maintained the old customs, dispensing a generous hospitality to all who visited his princely estate.[30]

In the Mexican era the dominant [sic] Mexican culture had transformed some Anglos into what historian Leonard Pitt calls "Mexicanized gringos."[31] Indeed, family life on Ysidora Pico's and "Don Juan" Forster's rancho blended Spanish tradition with Anglo customs. These changes were reflected in the domestic architecture and economy of the rancho, the dress, customs and

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[29] John Clay, *My Life on the Range* (1961), 29-31. Writing 40 years after his visit, Clay frequently is mistaken on details. He consistently misidentifies Marcos Forster as Juan, his youngest brother.

[30] San Diego Union, February 21, 1882, 3:2.

[31] Pitt (1966), 125-127.

hospitality of the Forsters, the bilingualism of the second generation, as well as in the rancho household and family structure itself. With some important modifications, the traditional ranchero family and the social hierarchy of provincial California persisted on the Santa Margarita through the 1870s.

Prior to the American conquest, strong attitudes among the Hispanic population regarding family solidarity, the subordination of women and respect to elders helped create a family structure where almost half the population lived in extended family households. Where families were not extended, they still tended to be large, averaging between five and six persons. The new class of rancheros built up self-supporting estates based on huge land grants and cattle enterprises as the mainstay for their large, growing families. Typically, the ranchero's household provided a home for a family that included his many children, a host of poor relatives, fictive kin, and a large staff of domestic servants, as well as shelter for passing friends and travelers. Mexican peons and the descendants of the mission Indians constituted almost the only available source of farm labor. A typical rancho during the middle Mexican period might have had as many as 50-100 Indian/Mexican workers serving as domestic servants, vaqueros, and field laborers. Charles Nordhoff reported that in 1872, for example, 30 to 50 persons were fed every day at the Santa Margarita Rancho. The ranchero ruled the household like a feudal lord and perpetuated the homage rendered by assuming the Spanish title *don* ("gentleman"), a term that emulated the lordly status of Spanish nobles. He was the patriarch of his extended family, patron to the numerous Indian workers living on his estate, and genial host to visitors.[32]

Cattle ranching fostered family oriented work and agrarian values supported the paternalistic extended family. Between 1865 and 1882 when Don Juan died, he and his wife Ysidora Pico, 3

[32] R. Griswold de! Castillo, "La Familia Chicana: Social Changes in the Chicano Family of Los Angeles, 1850- 1880," *The Journal of Ethnic Studies*, 3:1 (Spring 1975), 41-58. As the Californios were primarily a rural country people, their culture was oral in form. Most were illiterate, therefore little written material is available except from a small class composed of wealthy landowners, politicians, military officers, and provincial administrators. Oral traditions were family based with the eldest members being the principal transmitters of the oral-based culture and traditions. Antonio Rios-Bustamente, "The Barrioization of Nineteenth-Century Mexican Californios: From Landowners to Laborers," *Masterkey 60* (Summer/Fall 1986), 26-35; Nordhoff (1876), 242.

of their 4 sons, and Don Juan's brother, Thomas, and his family, all resided on the Santa Margarita Ranch. Don Juan managed the financial affairs of the cattle business which caused him to spend several months a year in San Francisco negotiating with butcher establishments for the purchase of his cattle. His sons Chico and Juan, Jr. were responsible for leading groups of vaqueros on long cattle drives up the San Joaquin Valley to San Francisco. Marcus organized the semi-annual rodeos at Las Flores and elsewhere on the ranch and grew crops and grains for consumption by the family and ranch employees in fields located near his Las Flores home. Thomas Forster was in charge of the sheep business.[33] The lifestyle of the rancheros meant long, hard days in the saddle for the men and equally long, arduous days for the women cooking, performing ranch chores, keeping house, caring for children, tending the family garden, making soap, carding wool, and weaving cloth for the family's clothing.[34]

In 1870 the U. S. census counted 47 persons living in the Forster household. Forty-three were employees and servants. Thomas Forster, his wife and their one daughter, lived in a separate residence located nearby. Chico and Juan Forster, Jr., both young men, age 29 and 25, respectively, lived with their parents. Each was single and listed his occupation as "ranchero." Both sons remained single, and were still living at home 10 years later. The Forsters maintained a large staff of 11 domestic servants, all were Hispanic-Californians (probably the descendants of Indian-Mexican parents) and female with the exception of one male, a 13 year old houseboy. The female servants ranged in age from 8 to 45, seven were single, two of whom had young children. Each of the three married domestics lived with their husbands who were employed as vaqueros by the Forsters. In addition to the servants, the Forsters employed and housed a total of 12 vaqueros, 3 laborers, one gardener, and a waiter. With the exception of one vaquero from Sonora, all were Hispanic-Californians.

[33] Forster to Couts Correspondence, passim. Cave J. Couts MS Collection, Hungington Library, San Marino.

[34] Frederico A. Sanchez, "Rancho Life in Alta California," *Masterkey: Anthropology of the Americas*, 60:2 (Summer / Fall 1986).

Ten years later when the Santa Margarita was understocked and up for sale, the household composition had changed radically. As the local and regional pastoral economy eroded, most skilled and semi-skilled wage earners such as the vaqueros, leather craftsmen, and other artisans, along with the large number of domestics, became jobless. The Mexican working class everywhere in California struggled to maintain their sense of community by moving into segregated, poverty-stricken barrios that became the center of Mexican social existence. Urbanization facilitated the emergence of new types of community organizations and institutions that complemented the old family-based support network.[35] By 1880, the number of non-related persons living in the Forster household had been substantially reduced to only 9 persons -- 5 vaqueros (3 Californios, 1 New Mexican, and 1 Indian), 2 laborers, and 1 carpenter. The Forster's [sic] had no domestic servants.[36]

Don Juan and Ysidora Pico's eldest son, Marcus, through marriage into a prestigious California family, further linked the Forsters to a small elite group with Spanish links to the Golden Age of the Ranchos. Sometime around 1865 when he was 25 years old, Marcus married a young woman he had known since childhood. Guadalupe Abila was the daughter of ranchero Don Juan Abila who owned the Niguel Rancho in southern Orange County adjacent to Don Juan Forster's Mission Viejo and San Juan Capistrano estates. As a wedding gift, Don Juan set aside some property at Las Flores for the couple and later, sometime between 1866 and 1868, he built for them a large adobe ranch house at the site. The architect or builder of the house is unknown. There was a wealth of skilled Mexican and Indian laborers with experience in construction of adobe structures living in the region, but the architectural details suggest that the builder was highly skilled and familiar with American building traditions. The Las Flores adobe blends the folk architectural traditions of the old Spanish hacienda with the so-called Monterey tradition

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[35] Richard A. Griswold del Castillo, "La Raza Hispano Americana: The Emergence of an Urban Culture among the Spanish Speaking of Los Angeles, 1850-1880" (1974), 20-3 5; Albert Camarillo, *Chicanos in a Changing Society: From Mexican Pueblos to American Barrios in Santa Barbara and Southern California, 1848-1930* (1979), 101-141.

[36] U.S. Census Returns, Manuscript Population Schedules, San Luis Rey Township, San Diego Count y, 1870 and 1880.

that was popularized by Thomas Larkin at his residence in Monterey, California. The house consisted of three primary elements organized in an elongated C-shape around a patio and garden, an area onto which the rooms of the house all open.

In the Las Flores Adobe, as well as other ranch buildings, provisions for life in the country were simple but functional and expressive of the Mexican lifestyle. Marcus, his wife, and their three small children lived in the patriarchial [sic] house, a two-story Monterey-style element that fronted on the coastal road and contained a broad veranda overlooking the Pacific Ocean. The long one-story, one room wide, hacienda-style element attached to the main structure contained workshops, store rooms, a pantry, and a dining area. In the traditional Spanish style, doors in each room offered access to a long covered porch, but there were no transverse entries from room to room. The long one-room wide design allowed more rooms to be added as the household grew. The hacienda segment probably provided shelter for the large number of servants and vaqueros who resided at the ranch. Living with the Forsters at Las Flores in the summer of 1870 were one 50-year old vaquero and five servants, all Mexican/Indian and second or third generation Californians.[37] The third element of the ranch complex contained a carriage house and barn. Because of the heat, cooking was done outside the main building and baking was done in a *horno* (oven) -- a practice common in Mexico.

The Las Flores Adobe was never as isolated as most other rural ranch houses. It was sited only a few hundred yards south of the ruins of the old Las Flores *estancia* and adjacent to the existing road from Los Angeles to San Diego. After Seeley & Wright established their stage service on the route in 1869, the Las Flores adobe became a stage station and a hospice for travelers, while the nearby *estancia* was used as a corral by the stage company.[38] Robert Glass Cleland in

[37] Three of the servants were young single Hispanic women, age 18 to 25; none had children. The other two servants were a young married Hispanic couple without children. U.S. Census, Manuscript Population Schedules, San Luis Rey Township, San Diego County, 1870.

[38] Herbert Crouch, *Reminiscences* (1915). Bancroft Library; Michael E. Thurman, "History of Las Flores to 1882," (1960), 74-75.

Cattle on a Thousand Hills mentions that Las Flores was also one of five sites used by the rancheros of the coastal plains between San Luis Rey and San Juan Capistrano as a spring rodeo site. The others were Las Pulgas, San Onofre, the Valley of Santa Margarita, and San Mateo. In his correspondence with Cave J. Couts of Rancho Guajome, Juan Forster frequently mentions spring rodeos at Las Flores throughout the 1860s and into the early 1870s. In 1873 the spring rodeo at Las Flores was organized under the management of Marcus Forster who was joined by 30 to 40 vaqueros.[39]

Don Juan and Marcus Forster's long established social and business relations with the old Californians, and their marriages into the Pico and Abila families, kept them socially true *hijos de pais*, but their varied economic ventures also brought them into contact with influential Americans in every sector of the state. They were broadly involved with the economic opportunities of Southern California and associated with government officials, bankers, and prospective land buyers.

As the cattle market continued to decline in the 1870s, the Forsters attempted to save their wealth by encouraging irrigation, colonization, and transportation improvements in the southland. During the fifties and sixties Don Juan and the other San Diego County rancheros drove thousands of head of cattle through the San Joaquin Valley to San Francisco each year. By the 1870s as California agriculture shifted from the pastoral economy to wheat farming, it became more difficult to make these long marches. Forster was among the southern California leaders who fought the "no fence law" -- a law that placed the responsibility for the restraint of livestock upon ranchers rather than upon the farmers, who formerly had to fence other people's stock out of their vineyards, orchards, and fields. When it became clear that a "no fence law" would pass, Forster began to experiment with shipping cattle from southern California to San Francisco markets by railroad out of Los Angeles. Don Juan Forster also represented the new

[39] Forster to Couts, March 1, 1861, CT 752; February 22, 1865, CT 779; Forster to Couts, April 14, San Diego Union, March 27, 1873

Anglo agricultural interests of San Diego County. He was elected as the San Diego delegate at a convention of progressive farmers held in November 1870 to organize the Agricultural Society of Southern California. In that same year he led a committee of five appointed in San Diego to lobby the state legislature on behalf of a coastal railroad route between Los Angeles and San Diego. He later promoted and became a director of the San Diego & Los Angeles Railroad Company and in 1882 succeeded in getting the first railroad between Los Angeles and San Diego built through Temecula Canyon and across the southern portion of his rancho to the coast.[40]

The coming of the railroad coincided with plans for the subdivision of the great ranchos of the southern coastal plains into farms. In 1873 Don Juan Forster sent Major Max Strobel to the Netherlands to convince farmers to immigrate to California and purchase lands on the Santa Margarita ranch. Strobel died while in Europe, so Juan went to the Netherlands himself to complete negotiations begun by Strobel. He wrote from Liverpool in May 1873 that he would return with colonists for the Santa Margarita Rancho in two months. He failed in his efforts. The Dutch government denied prospective colonists permission to leave the country until a commission investigated the proposal. The commissioners arrived in southern California and found the hills and valleys barren, so they reported unfavorably on the colonization plan. The Forsters lost a great sum of money on the failed colonization venture.[41]

The composition of the Marcus Forster household between 1870 and 1880 reflects some of the changes that were occurring at Las Flores with the breakdown of the old ranchero economy. By 1880 the total number of people residing at the Las Flores ranch complex had grown to fifteen. Marcus, his wife Guadalupe, four of their five children, occupied the dwelling with nine

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[40] San Diego Union, February 3, 1870, March 8, 1872, November 10, 1870, and August 12, 1870; Forster to Couts, May 29, 1871, CT 895 and February 17, 1872, CT 904. Cave J. Couts MS Collection, Huntington Library, San Marino, CA. Don Juan was also a leader in the movement to improve the breeds of horses and cattle grazing on the ranchos of southern California. In 1876 he drove more than 1,000 horses bred on the Santa Margarita to markets in the northwest and Chicago. San Diego Union, March 24, 1876.

[41] San Diego Union, January 17, 1873, March 21, 1873, and May 30, 1873; Jensen (1969), 42.

unrelated persons. Of the Forsters, only the eldest daughter Susana was missing, perhaps she had married. The oldest son, Marcus Jr., attended school but the other three children were still too young. Of the nine non-family members all but one was a native-born mestizo or Indian, and as a group they were impoverished and surprisingly old. Significantly, none called themselves "vaqueros," but five listed their occupation as stock herders or sheepherders (the four Hispanics were aged 80, 75 (2), and 50, and the one Indian, age 35). As had been the case at the Santa Margarita house, the number of domestics serving the family had declined. Only two remained: one was male and the other female, both were Indians. One artisan lived at the adobe. She was elderly Indian, probably from one of the Las Flores *rancherias*, who listed her occupation as a "basketmaker." The Forster's rented one of their rooms out to a boarder who was a retired Polish merchant.[42]

By 1880 the Santa Margarita and adjacent ranchos were fenced and the old traditions and rules governing almost every aspect of rancho work were under assault. Sociocultural events associated with intensive ranching activities such as the *matanza* (slaughterings) and the *rodeo* (roundup) declined in importance as did the role of the vaquero. Marcus spent less time raising cattle and more time on cultivation of the soil, improving his stock, and raising sheep for wool. In 1875 Marcus sunk the first well at Las Flores in an attempt to discover an artesian water supply for irrigation purposes. By 1880 Marcus had 600 acres of land under cultivation and 600 acres of orchard and irrigated pasture land. In addition, he rented small parcels of land to tenant farmers in the vicinity of Las Flores and promoted colonization efforts on the coastal plains of the Santa Margarita. In 1878 he laid out a new community with his fathers assistance, called Forster, on the stage line just south of the Orange County line and stocked it with 35 agricultural colonists and their families. By early 1880 Marcus had begun to move his sheep from Las Flores to the hills near Temecula to make room for colonists who planned to rent land to raise barley and wheat in the valleys at Las Flores. The farmers were so successful that in the

[42] U.S. Census Returns, Manuscript Population Schedules, San Luis Rey Township, San Diego County, 1870 and 1880.

summer of 1880 Marcus acquired his first large piece of agricultural machinery -- a 12-horse thresher -- to assist those with the largest fields to harvest their crops. Marcus shipped 4,000 sacks of wheat to the San Francisco market from Las Flores in 1880. The 1880 agricultural census indicates that Marcus still owned livestock, but 70 were dairy cows and 500 were purebred cattle. Only 200 were the long-horned, tough cattle that had served his forebearers so well in Alta California's semi-desert climate. Furthermore, Marcus owned many more sheep than cattle. In 1880 his 6,000 sheep netted him 15,000 pounds of wool which he sent by team and wagon to the San Diego market; four years later he had acquired some 10,000 additional sheep.[43]

By the early 1880s wheat fields on the old ranchos of San Diego County were a common sight. A correspondent to the San Diego Union travelling along the proposed route of the California Southern Railroad north of San Diego in the summer of 1881 wrote: "From the point on past Bandini's (the Buenavista Ranch) and Guajome, nearly every acre is awaiting the coming of the plow and the railroad, and the advance of the locomotive will surely bring the plow to all these acres all of which will be too valuable for stock purposes only." When the group arrived at Las Flores, one member noted that there was a rumor that Don Juan planned to subdivide some 60,000 acres within the next ten years into small 100-acre farms and residential lots clustered around several new communities. According to the Union correspondent, Forster had attempted to secure a substantial loan from Charles Crocker of the Southern Pacific Railroad earlier in the year. Forster would use the money to subdivide the rancho, but reserve 3,000 acres for himself at his Santa Margarita estate and 2,500 acres for his son Marcus at Las Flores. The proposed subdivision did not materialize.[44]

Don Juan Forster and Ysidora Forster y Pico both died in 1882. Little of their wealth remained, except for the vast Santa Margarita y Las Flores Ranch. In order to meet the debt obligations of

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[43] U.S. Census, Agricultural Manuscript Schedule: San Luis Rey Township, San Diego County, 1880; San Diego Union, January 10, 1875, November 15, 1879, January 15, 1881, May 13, 1881, and June 7, 1884.

[44] San Diego Union, February 22, 1881, August I, 1881, August 18, 1881.

the estate, Marcus and his brothers were forced to sell the Santa Margarita. James C. Flood of San Francisco acquired the property. Richard O'Neill managed the property for Flood and lived on the ranch at the Santa Margarita adobe until his death at age 85 in 1910. Flood deeded half interest in the ranch to O'Neill in 1906 for his faithful service in managing the affairs of the ranch. In 1888 O'Niell leased the Las Flores adobe and 1,500 (later upwards of 3,000) acres surrounding the property to the Magee family.[45]

The Magee's [sic] were descendants of Lieutenant Henry Magee of the New York Volunteers, who came to California as a soldier in 1847 and was stationed at the Presidio of San Diego, and Victoria Pedrorena, one of six daughters of Don Miguel and Maria Antonia (Estudillo) de Pedrorena. Thus, the Magees, although never wealthy, were also an important family in the San Diego community with ties to both the pioneer Mexican and Anglo settlers of the region.[46] The Magees owned the Castro Ranch, overlooking San Luis Rey Valley. Henry Magee died in 1887 leaving his eldest children Jane, age 22, and Henry, age 24, to care for the other eight Magee children. Richard O'Neill invited the Magee family to become tenant farmers on the Santa Margarita. They moved into Marcus Forster's old adobe at Las Flores which was then vacant. Henry lived at Las Flores from 1888 until 1913 when he moved to Palomar mountain. Jane, the matriarch of the family, resided at the Las Flores Ranch for nearly 50 years.

The Magee's [sic] raised chickens, pigs, and cattle and cultivated lima beans at Las Flores. Data from the U. S. census returns indicates that there were 15 persons living at the Magee adobe in 1900. Four were members of the Magee family and the other 11 were all men employed as farm and day laborers, or as skilled artisans. Seven of the employees were California Indians, one was Chinese, and three Anglos. None were Mexican. Over the last half of the 19th century the old

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[45] Jeanne Skinner Van Nostrand, "The American Occupation of Rancho Santa Margarita y Las Flores," *California Historical Society Quarterly*, 22:2 (June1943), I 75-6; Los Angeles Herald Examiner. October 3, 1971.

[46] San Diego Union, April 1, 1951 A-7; Moyer and Pourade 1969:8; Jerome W. Baumgartner, *Rancho Santa Margarita Remembered* (1989), 93-95.

Mexican life of the province had retreated southward along the coastal plains that reach from Los Angeles to Lower California. The old life retreated but never wholly vanished. During the early decades of the 20th century the tide of Mexican influence began to sweep up the coast again including a number of persons of Mexican descent. By 1910 the number of persons residing at the Las Flores adobe had increased to 22 persons. In contrast to 1900, none were Indian and the vast majority of the unskilled laborers were Hispanic. However, unlike previous years, 83 percent were aliens from Mexico. All but three of the 14 Mexicans had come to the United States since 1907 and seven spoke only Spanish. The Magees also employed a Mexican hostler, an orchard hand from Germany, a blacksmith from Pennsylvania who had been employed by the Magees since 1900 and his apprentice, a Chinese cook, and one vaquero.[47]

From 1912 until 1962 the Magees raised lima beans at Las Flores. Within the United States lima and baby lima beans were grown exclusively in California in the 1920s and they constituted one-third of the total bean crop in California. Almost all of the 100 million-pound annual crop was grown along the seaward margin of the Southern California coastal region where frequent fogs and daily sea breezes moderate the heat and dryness of the prolonged summers. Lima bean production was limited to the narrow strip of land affected by these summer fogs and cooling sea breezes.

High humidity and the low rate of evaporation prevailing along the coast made it possible to produce a summer crop of lima beans at Las Flores without irrigation. The lima bean plant matured its seed sufficiently early to allow time for harvesting, curing, and threshing the crop before the arrival of autumn rains. Most of the work done on bean farms was done by machinery, therefore, large-scale production was the norm. Most ranches were 5,000 to 15,000 acres in size. The intensive period of labor came in the early summer when hoeing was necessary and in late summer for stacking the vines. It was commonplace for bean ranches to run cattle and a few sheep on the mountain pasture during most of the year, and when

[47] U.S. Census. Manuscript Population Schedules: San Luis Rey Township, San Diego County, 1900 and 1910.

pasturage was scarce they consumed bean straw, a valuable by-product of the industry.

The system of farming and the many cultural methods followed in bean farming were direct adjustments to the environmental conditions that prevailed in the region. Dry farming depended on storage of winter rainfall for growth of plants in the sumer [sic], therefore, deep plowing (12-18 inches) after harvest let winter rains penetrate deeply. Planting was done in May after the soil was permanently warmed and fields were hoed frequently to control weeds and conserve moisture. Harvesting was accomplished first by means of a sled-like, horse drawn implement which cut off the plants below the surface, later tractors pulled the cutting blades and stacked the plants into windrows. After allowing the crop to cure for two to three weeks in the field, threshing was done by transient crews and large threshing machines. On the Las Flores Ranch, the dry beans were stored in bags at huge warehouses on the railroad siding at Don Station awaiting shipment to market.[48]

The Magee ranch at Las Flores contained about 3,000 acres, or one-third of the total acreage planted to lima beans in San Diego County in 1927. Jane Magee, known as the "Bean Queen of Southern California," ran the lima bean farm operation until 1922 when she gave control to her youngest brother, Louis Magee. Jane, who never married, died in 1946 at age 83 at the Las Flores ranch. She was survived by her two brothers, Louis and William, and her sisters, Louisa Magee and Mrs. Antonio Johnson, both of Oceanside. Louis carried on the bean farming operations until his retirement in 1962. Louis died in 1965. Ruth Magee, the last to survive, died in 1968.[49]

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[48] Zierer, Clifford M, "The Lima Bean Industry of the Southern California Coastal Region," *The Bulletin of the Geographical Society of Philadelphia* 27:1 (January 1929), 65-86; Jerome W. Baumgartner, *Rancho Santa Margarita Remembered: An Oral History* (1989), 92-106.

[49] Tom Hudson, "St. Margaret and the Flowers," *The High Country* 36 (Spring 1976), 26; "Las Flores Rancher" (Pamphlet, n.p., n.d.); San Diego Union, March 4, 1946 A-7 and April 6, 1941, B-6. Although the Santa Margarita y Las Flores Ranch was purchased by the United States in 1941 as part of Camp Pendelton [sic] Marine Base, President Roosevelt granted the Magee family life-time occupancy in 1942.

APPENDIX E: PROGRAMMATIC ACCESSIBILITY GUIDELINES FOR INTERPRETIVE MEDIA

PROGRAMMATIC ACCESSIBILITY GUIDELINES FOR INTERPRETIVE MEDIA

Following are excerpts from the Programmatic Accessibility Guidelines for National Park Service Interpretive Media, Version 2.3, prepared in May of 2017 by the Harpers Ferry Center Accessibility Committee. The sections shown here provide information that is applicable to the work proposed at Las Flores in the development of exhibits, publications, historic furnishings displays, and wayside exhibits. The full document can be found online at https://www.nps.gov/features/hfc/guidelines/.

EXHIBITS

Exhibits are multi-media experiences. Because people learn in many ways, exhibits use diverse techniques to interpret park resources, teach concepts, and stimulate interest. Exhibits tell stories using objects, text, images, multimedia, interactive devices, figures, models, and lighting effects. Successful exhibits communicate to the visitor the significance and context of artifacts that the NPS has chosen to collect, conserve, and display.

Visitors are free to move through exhibits at their own pace. They may often interact physically with exhibits and learn by doing. The goal is not only to educate but to inspire. Display items range from tools and weapons to the art of prehistoric and historic American cultures. Webs of life in our natural habitats are shown with plant and animal models. Illustrations complete stories and set them in larger contexts. Art is used to reconstruct early events for which no visual material exists.

Exhibits sometimes must be put in places ill-suited to their purpose. Pre-existing architectural structure or décor may limit many exhibit design decisions. Because the situations encountered in NPS exhibit spaces are so diverse, thoughtful, sensitive design can go a long way to produce NPS exhibits that can be enjoyed by a broad range of people.

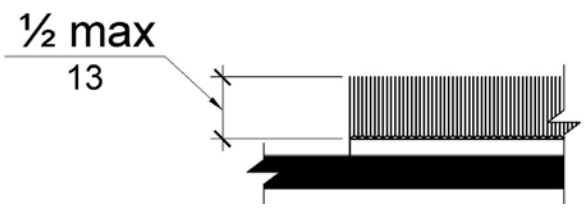
For more information, visit Harpers Ferry Center's Exhibits and Museums Web Page .

Exhibits Guidelines: Mobility

Floor or Ground Surfaces

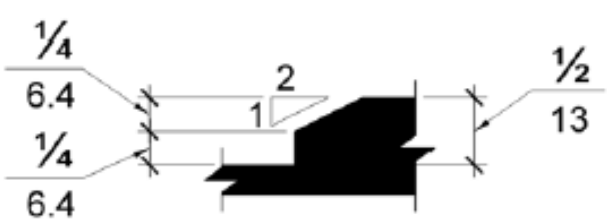
See [ABAAS 302 Building Blocks]()

- Floors and ground surfaces shall be stable, level, firm, and slip-resistant.
- Carpet or carpet tile shall be securely attached and shall comply with ABAAS 302.2 "Carpet." Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge. Carpet edge trim shall comply with ABAAS 303, "Changes in Level."



ABAAS Figure 302.2: Carpet Pile Height

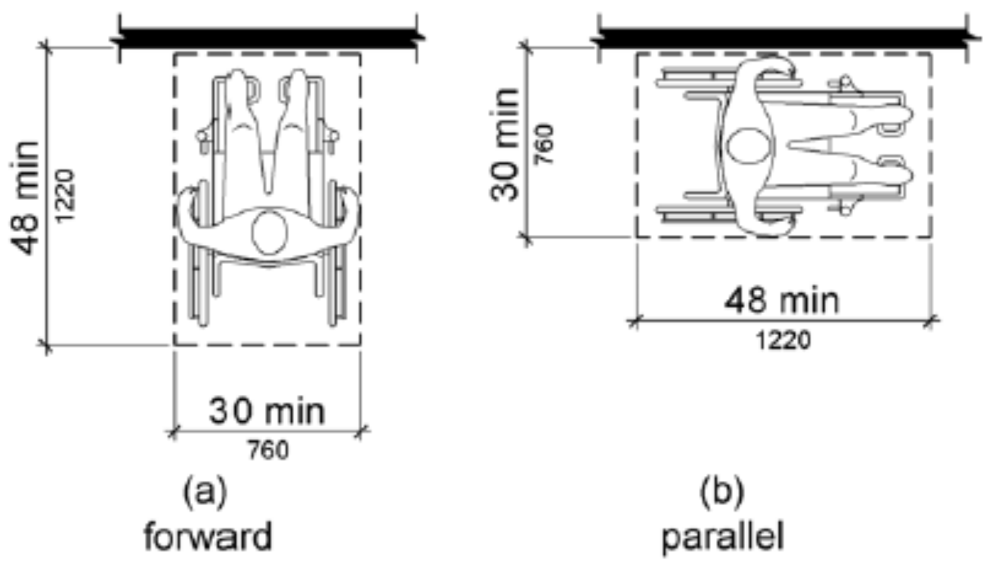
- Changes in level (See ABAAS 303 Building Blocks)
- Vertical: Changes in level of ¼-inch high maximum shall be permitted to be vertical.
- Beveled: Changes in level between ¼-inch and ½-inch shall be beveled with a slope not steeper than 1:2. (See also ABAAS advisory 303.3.)



ABAAS Figure 303.3: Beveled Changes in Level

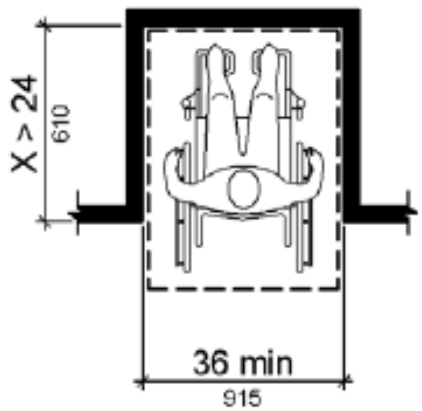
- Ramps: Changes in level greater than ½-inch high shall be ramped, and shall comply with ABAAS 405 Accessible Routes/Ramps. In most cases ramps shall be as gradual as possible and not exceed a 1-inch rise in 12-inch run.

- Position: Unless otherwise specified, clear floor or ground space shall be positioned for either forward or parallel approach to an element.

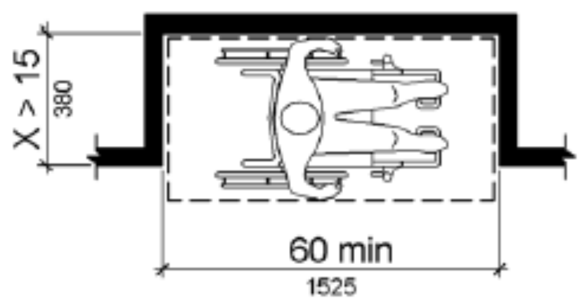


ABAAS Figure 305.5: Position of Clear Floor or Ground Space

- Maneuvering Clearance: Where a clear floor or ground space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearance shall be provided in accordance with ABAAS 305.7.1 and 305.7.2 Building Blocks



ABAAS Figure 305.7.1: Maneuvering Clearance in an Alcove, Forward Approach



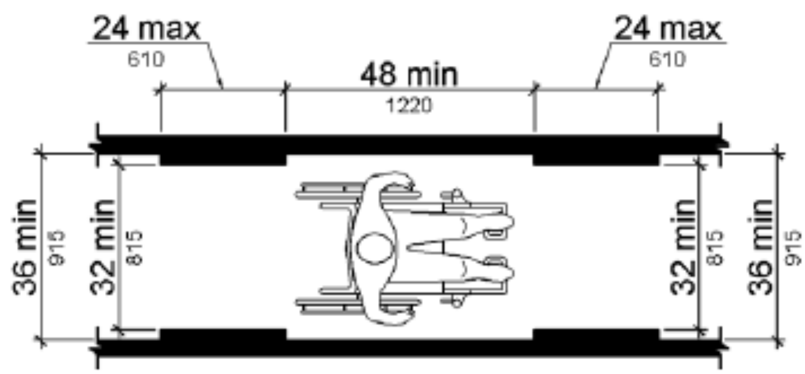
ABAAS Figure 305.7.2: Maneuvering Clearance in an Alcove, Parallel Approach

Circulation Space

- General: Circulation through the exhibit space shall meet the requirements of an accessible route as described in ABAAS, Chapter 4, Accessible Routes.

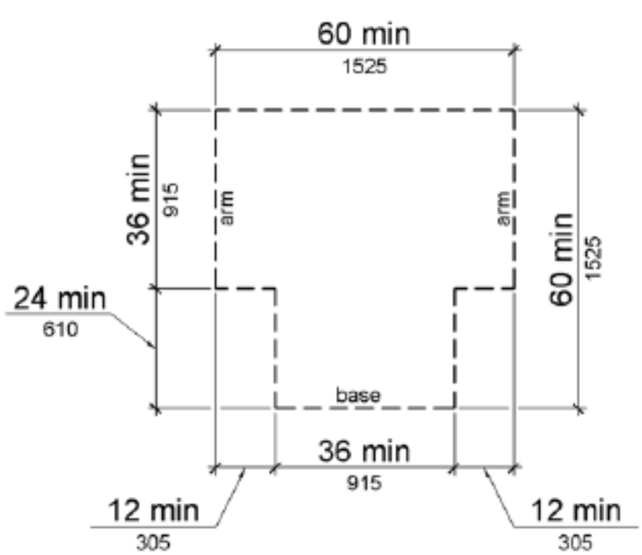
  The exhibit space should be free of architectural barriers. If, for example, an exhibit is in an inaccessible area of a historic structure, at least one method of alternative accommodations shall be provided. If the inaccessible space is of crucial interpretive significance to the site, an alternative method of accommodation shall be provided. (See "Interpretive Planning Guidelines" and "Appendix D: Alternative Media Formats.")

- Passageways through exhibits shall be at least 36 inches wide to provide adequate clearance for wheelchairs.



ABAAS Figure 403.5.1: Clear Width of an Accessible Route

- Turning Space: If an exhibit passageway reaches a dead-end, a turning space shall be provided by either a T-shaped turning space which complies with ABAAS Figure 304.3.2 or a circular space of 60 inches diameter minimum. The space shall be permitted to include knee and toe clearance complying with [ABAAS 306 Building Blocks, Knee and Toe Clearance].

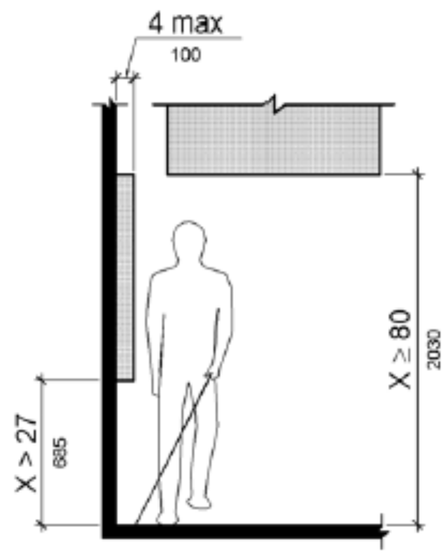


ABAAS Figure 304.3.2: T-Shaped Turning Space

Protruding Objects

See ABAAS 307, Building Blocks, Protruding Objects

- Objects projecting from walls with their leading edges between 27 inches and 80 inches above the floor shall protrude no more than 4 inches in passageways or aisles. Objects projecting from walls with their leading edges at or below 27 inches above the floor can protrude any amount. (See ABAAS Figure 307.2 below.)

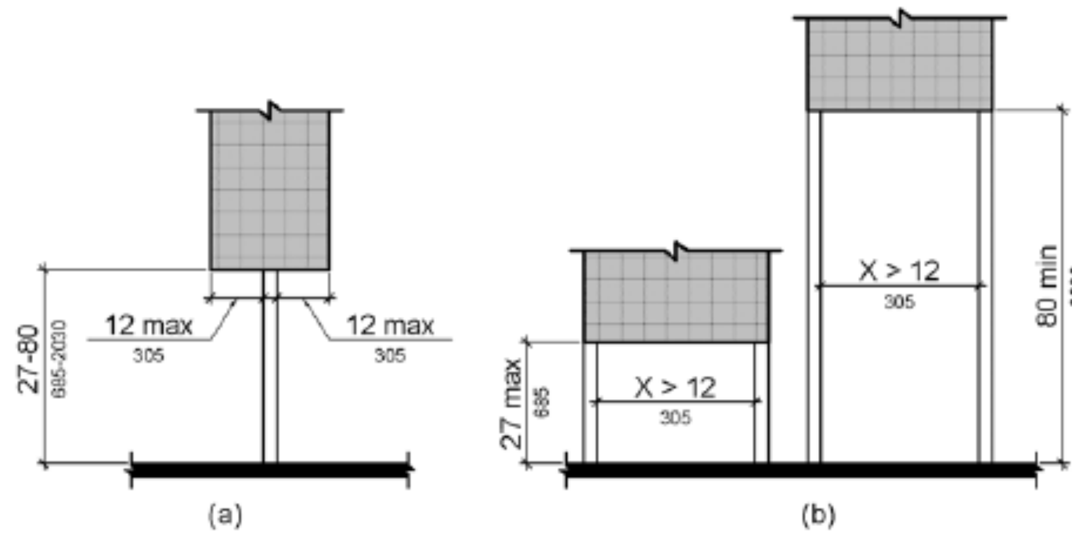


ABAAS Figure 307.2: Limits of Protruding Objects

- Passageways or other circulation spaces shall have a minimum clear headroom of 80 inches. For example, signage hanging from the ceiling must have at least 80 inches from the floor to the bottom edge of the sign. (See ABAAS Figure 307.2 above.)

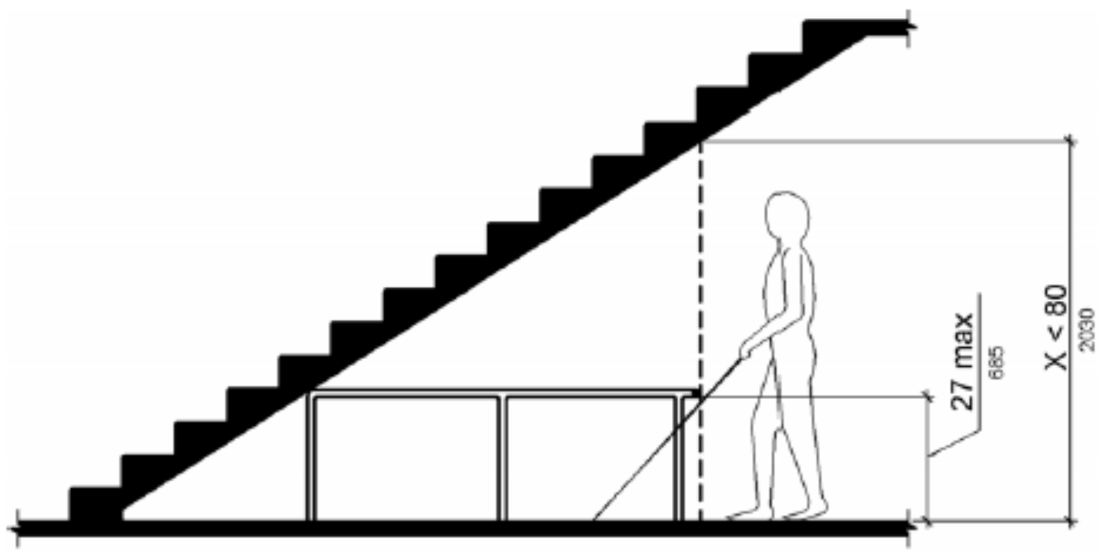
- Protruding objects shall not reduce the clear width required for accessible routes (See ABAAS 307.5, Required Clear Width.)

- Post-Mounted Objects: Free-standing objects mounted on posts or pylons will overhang a maximum of 12 inches from 27 inches to 80 inches above the floor. (See ABAAS Figure 307.3 below.)



ABAAS Figure 307.3: Post-Mounted Protruding Objects

- Vertical Clearance shall be 80 inches high minimum. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches high. The leading edge of such guardrail or barrier shall be located 27 inches maximum above the finish floor or ground.



ABAAS Figure 307.4: Vertical Clearance

- When a horizontal exhibit element is located on a platform, table, pedestal, or otherwise surrounded by a railing over which visitors will lean, a vertical clearance of 80 inches minimum shall be maintained up to 36 inches inward from the railing.

Artifact Cases

- Maximum height of bottom of artifact case shall be no higher than 30 inches from the floor of the room. This includes vitrines that are recessed into an exhibit wall.

- Artifact labels on a vertical surface shall comply with "Typography" below. Artifact labels on a horizontal surface shall be mounted at an angle to maximize their visibility to all viewers.

- Transitions between glazing and framework of artifact cases or glass doors which surround exhibits or artifacts shall be placed in the visitor's line of sight and not hidden behind railings, platforms, or other exhibit structures. This is so that the glazing is immediately visible to the visitor, and the visitor does not mistakenly think he or she can lean into the opening for a closer look.

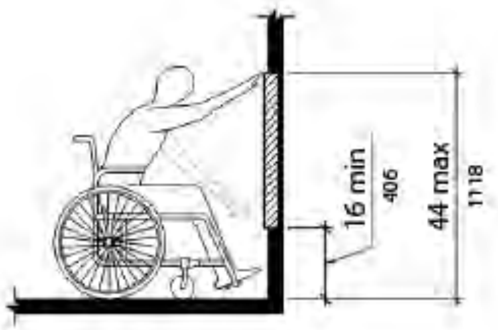
- Angled tables are more accessible to wheelchair users.

Touchable Exhibits--operated or manipulated with one hand

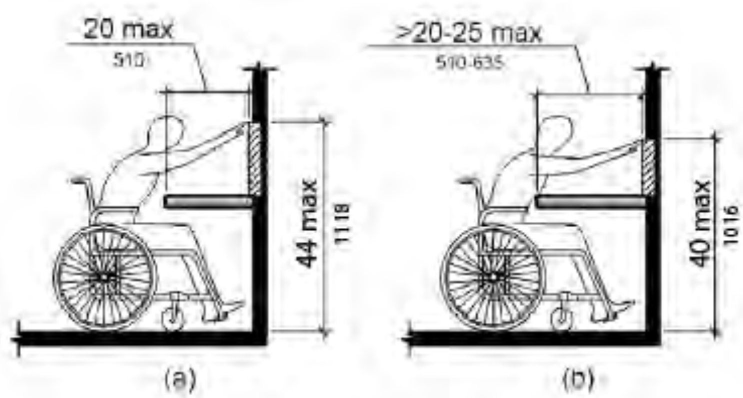
The following reach ranges refer to items briefly touched with one hand, such as a push button or small, tactile bas-relief model fastened to a panel or reader rail.

- Reach Ranges: See ABAAS 308, Building Blocks/Reach Ranges for more information, including children's reach ranges, obstructed/unobstructed reaches, and exceptions. NPS uses the common reach ranges of adults and children ages 9 and above for forward and side unobstructed reaches.

- Forward Reach (unobstructed): For touchable exhibits positioned unobstructed on a vertical surface, the high forward reach will be 44 inches maximum, and the low forward reach will be 16 inches minimum above the finished floor. These are common measurements for adults and children ages 9 and above. (See NPS modified ABAAS figure 308.2.1. below)



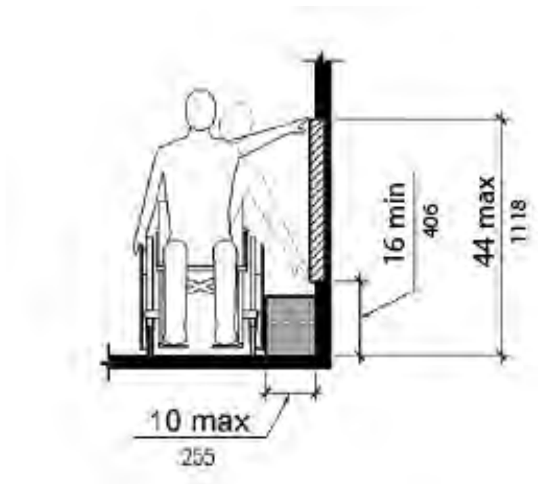
NPS Modified ABAAS Figure 308.2.1: Unobstructed Forward Reach. Accessible to adults and children ages 9 and above.



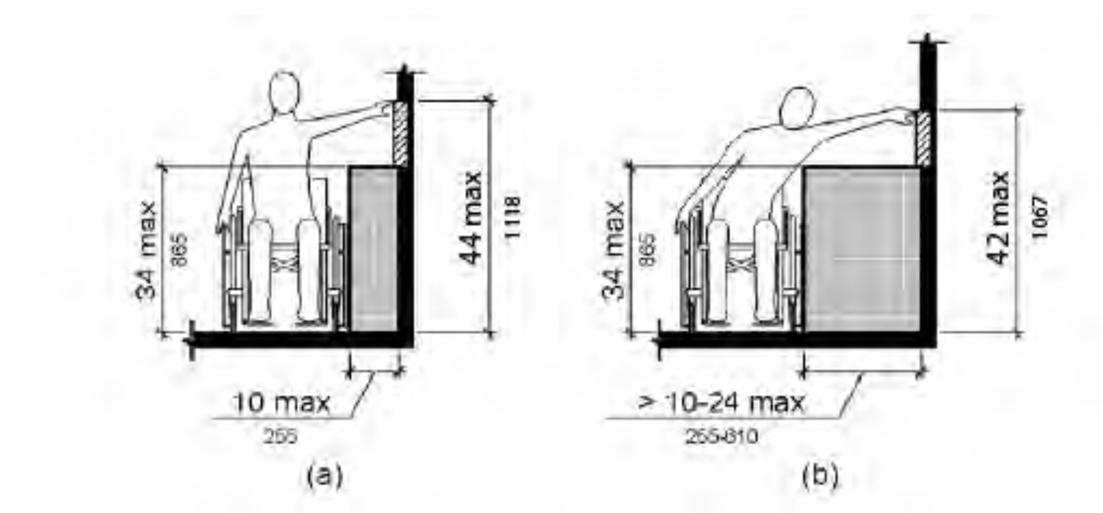
NPS Modified ABAAS Figure 308.2.2: Unobstructed High Forward Reach. Accessible to adults and children ages 9 and above.

- Side Reach (unobstructed): Where a clear floor space allows a parallel approach to a touchable exhibit and the side reach is unobstructed, the high side reach will be 44 inches maximum, and the low side reach shall be 16 inches minimum above the finished floor. These are common measurements for adults and children ages 9 and above. (See

NPS modified ABAAS figure 308.3.1 below.)



NPS Modified ABAAS Figure 308.3.1: Unobstructed Side Reach. Accessible to adults and children ages 9 and above.



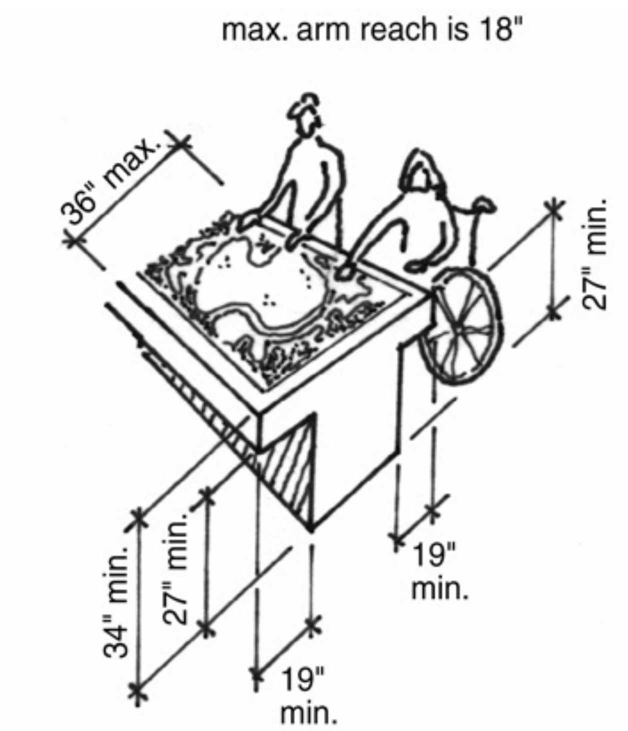
NPS Modified ABAAS Figure 308.3.2.: High Side Reach. Accessible to adults and children ages 9 and above.

- Operable Parts: See "Operable Parts of Interactive Exhibits" below.

Touchable Exhibits--operated or manipulated with two hands

The following reach range refers to more detailed, complex, large, tactile interactive exhibits which may contain braille, raised lettering, bas-relief sculpting, various textures, and may include switches or buttons to activate multimedia such as audio programs. The visitor should be able to use both hands simultaneously to interact with the exhibit.

- Reach Range: Flat-mounted or tabletop exhibits to be touched or closely approached, such as relief maps and tactile exhibits, shall allow for a clear knee space that is a minimum of 36 inches wide and 27 inches clear height above the floor surface. Where it does not create a hazard for persons with low vision, 29 inches high knee space is recommended for wheelchair users. (See Figure 18-1 below; courtesy California State Parks Accessibility Guidelines.)



California State Parks Accessibility Guidelines Figure 18-1: Flat mounted Tactile Exhibit

Railings and Barriers

- Vertical Protective Barriers: Vertical barriers to protect artifacts, models, multi-media presentations, or other exhibit elements, which are intended to be viewed but not touched by visitors, shall have a maximum height of 36 inches from the floor. The barrier shall be constructed to provide unobstructed viewing over the barrier by persons in wheelchairs.

- Reader Rails: Railings or barriers that are also the structural support for angled interpretive panels, which may include text, graphics, touchable models, interactive exhibits, and audiovisual elements, are called reader rails. Reader rail panels shall have a maximum height of 30 inches from the floor to the front bottom edge of the panel. The angle of the panel should be 30 degrees. Reader rail panels shall meet the requirements for Protruding Objects under ABAAS 307.2 Building Blocks/Limits of Protruding Objects.

Information and Work Surfaces

Information desks and sales counters shall include a section made to accommodate both a visitor in a wheelchair and an employee in a wheelchair working on the other side. A section of the desk/counter shall have the dimensions specified below.

- Work surfaces shall be between 28 and 30 inches in height above the finished floor. Ideally, this will accommodate the needs of both adults and children ages 6 and above. (See ABAAS 902.)

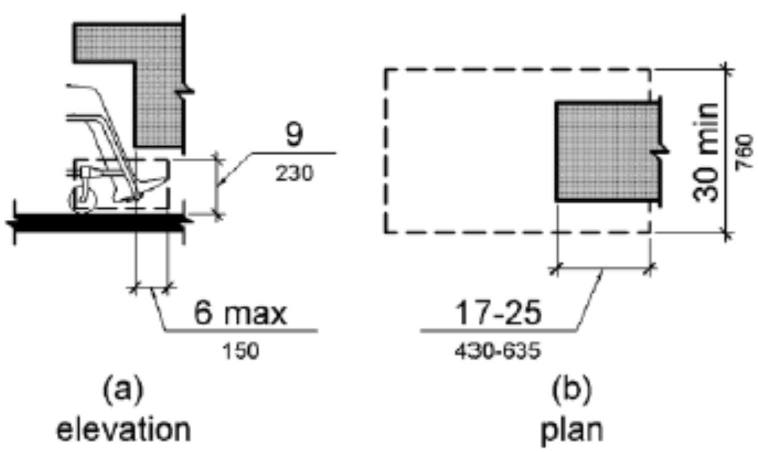
- The work surface shall never be below 28 inches or above 34 inches in height to comply with ABAAS 902, Built-in Elements/Dining Surfaces and Work Surfaces.

- Knee clearance space: See “Seating” below.

- Width of top surface of section: at least 36 inches. Additional space must be provided for any equipment like a cash register.

- Area underneath and behind desk: Since both sides of the desk may have to accommodate a wheelchair, this area should be open all the way through to the other side. There shall be no sharp or abrasive surfaces under the work surface desk. (See ABAAS 804.3.3, Special Rooms, Spaces and Elements/Kitchens and Kitchenettes, Work Surfaces Work Surfaces.)

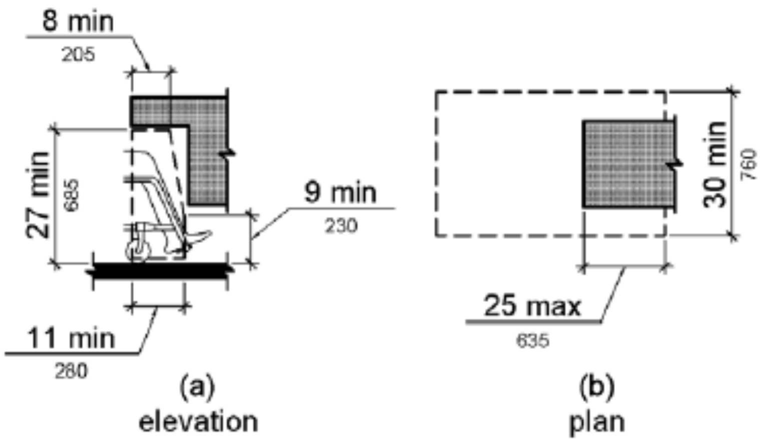
- The floor space behind the counter shall be free of obstructions. The finished floor treatment extends underneath the desk.
- Seating--Interactive Stations/Work Areas
- Toe Clearance: See ABAAS Figure 306.2 below. See ABAAS 306, Building Blocks/Knee and Toe Clearance, Toe Clearance for the complete requirements.



ABAAS Figure 306.2: Toe Clearance

- Knee Clearance: See ABAAS 306.3 for the complete requirements. The knee space underneath a work desk shall be:
    - o 27 inches minimum above the finished floor;
    - o 25 inches maximum in depth;
    - o 30 inches wide minimum; and,

- Provide a clear floor space of at least 30 inches by 48 inches in front.

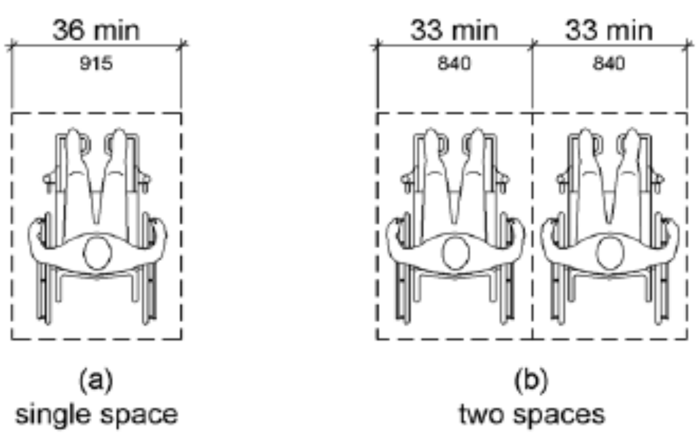


ABAAS Figure 306.3: Knee Clearance

Mini-theaters within a museum exhibit area

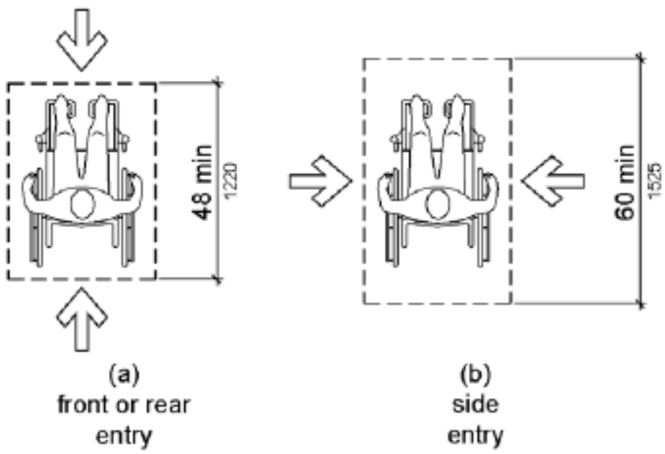
When the exhibit incorporates a short multimedia presentation, like a video, in a mini-theater with bench seating (see ABAAS 903.3 and 903.6, Built-In Elements/Benches, Size & Structural Strength for information), space shall be provided for at least one visitor in a wheelchair.

- The wheelchair space width shall be 36 inches wide minimum.



ABAAS Figure 802.1.2: Width of Wheelchair Spaces in Assembly Areas

- The wheelchair space depth: Where a wheelchair space can be entered from the front or rear, the wheelchair space shall be 48 inches deep minimum. Where a wheelchair space can be entered only from the side, the wheelchair space shall be 60 inches deep minimum.



ABAAS Figure 802.1.3: Depth of Wheelchair Spaces in Assembly Areas

- Unobstructed view: The wheelchair space shall be located so as to provide an unobstructed view of the multimedia presentation.

- Overlap: Wheelchair spaces shall not overlap circulation paths.

- Non-Fixed Seating: If seating in a mini-theater is in the form of benches, at least one seat with back and arm support shall be provided. This support is essential for people who have mobility impairments— seat arms and backs offer

Operable Parts of Interactive Exhibits

- Operable parts of mechanical interactive exhibits shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds maximum. (See ABAAS 309.4.) A person with a closed fist should be able to use the object or control.

- Push buttons for electrically activated interactive exhibits or audiovisual programs shall be spaced a minimum of 0.7 inch from the center of one button to the closest edge of the next button. (See "Hands-On Architecture," US Access Board Research, Figure 2.2.) Multiple buttons shall be arranged in either vertical or horizontal rows.

- Height: Operable parts shall be placed within one or more of the reach ranges specified in ABAAS 308. (See also "Touchable Exhibits" above for NPS modified reach ranges.)

Exhibit Guidelines Visual

Tactile Exhibits

- Touchable examples: Tactile models and other touchable exhibit items should be used whenever possible. Examples of touchable exhibit elements include relief maps, scale models, raised images of simple graphics, reproduction objects, and replaceable objects (like natural history or geological specimens, cultural history items, etc.). (See "Appendix D: Alternative Media Formats.")

- Hands-on living history areas are helpful to visitors with visual impairments. These areas allow visitors to interact with props, reproductions, and interpreters.

- Placement of touchable, tactile models shall be according to "Exhibits Guidelines: Mobility, Touchable Exhibits."

- Identify the object and communicate to visitors that the object is meant to be touched.

- Size, toe/knee/maneuvering clearances, reach ranges for the ages of the youngest members of the intended audience, etc., must all be considered. (See "Exhibits Guidelines: Mobility.")

- Be sure to use non-toxic inks on areas that people touch.

- Tactile Maps: See "Publications Guidelines: Visual."

- Tactile Models:
    - Tactile models are an effective interpretive tool for all people, but they are critical to the understanding and perceptions of the elements being interpreted for people with visual impairments and cognitive disabilities. All models need to be designed for tactile use by all visitors. Tactile models can be everything from objects to buildings to landscapes to natural specimens such as animal life, birds, and geological features.
    - The selection of the models to be developed for a facility needs to be included in the planning. The need to provide accessible tactile models should not be the only criteria. The context of the subject matter must be appropriate and significant to the overall visitor experience.
- Production of Tactile Models:
    - The model shall be of a material that is comfortable to touch, resistant to wear, and finished with a coating that allows for routine cleaning.
    - No applied or glued elements shall be used on the model. The model shall be cast, carved, or CNC (Computer Numerical Control) routed as one piece.
    - Colors and images shall be incorporated into the material, spray-applied, or ink-jet printed. No brush-painted details or self-adhesive vinyl decals or type shall be used.
    - Variety in textures shall be used to differentiate between features on the model like differences in vegetation on a topographic landscape.
    - Details of the model shall be of an appropriate scale to be discernable by finger touch.
    - Three types of scales help the visitor understand the object in its entirety:

- Actual scale: for example, the Statue of Liberty has a tactile model of the statue's actual-size foot.
- Miniature scale: for example, a hand-held tactile model of the entire Statue of Liberty.
- Enlarged scale: to understand details

o The overall size of the tactile model shall not be in violation of the allowable reach ranges under ABAAS 308 so that users can touch all areas of the model. Also, if the model is too large for all areas to be reached with both hands from the same position, it is more difficult to comprehend by touch. Apply reach ranges of children at a variety of ages in relationship to the subject matter. (This information can be found in the Architectural Graphics Standards, 10th Edition).

o Exterior Tactile Models: Do not use metal for models placed where there will be temperature extremes. If models are placed in uncovered exterior areas, allow for drainage from the model surface to prevent puddles and ice formation.

Computer Interactive Programs

For technical requirements, see the Rehabilitation Act of 1973, as amended, Section 508.

Typography

- Making fonts accessible is more than choosing the right font. It is also using the font properly: size, line length, leading, letter and word spacing, color, lighting, contrast, etc. Readability of exhibit labels by visitors with various degrees of visual impairment will be enhanced by following these guidelines. If one attribute is reduced—for example, lighting or viewing distance—then other attributes must be increased to compensate for legibility, like increasing the point size and/or contrast.

- Type size: While a 24-point minimum type size is a general rule for exhibit text (including photo captions) viewed at eye level, readability also depends on viewing distance. A person with low vision who can read large-print publications would have to be very close to a 24-point exhibit label.

Accessible Type by Probable Viewing Distance		
Probable Viewing Distance	**Interpretive exhibits minimum type size (Helvetica Regular)**	
	X-height mm (in)	**Set size (point)**
Less than 75 mm (3 in)	4.5 (3/16)	24
1 m (39 in)	9 (3/8)	48
2 m (78 in)	19 (3/4)	100
3 m (118 in)	28 (1-1/8)	148
Courtesy Parks Canada, Design Guidelines for Media Accessibility		

- Typeface: Use the most readable typefaces wherever possible, particularly for body copy.
- Accessible sans-serif fonts do not have varied stroke widths. Examples of accessible sans-serif fonts include: Arial, Futura, Helvetica, Optima, Tahoma and Trebuchet. Univers. Frutiger. See visual below.

Examples of accessible sans-serif fonts:

Arial	Frutiger
Futura	Helvetica
Optima	Tahoma
Treburchet	Univers

- Accessible serif fonts have limited varied stroke width. Examples of accessible serif fonts include NPS Rawlinson and Century. See visual below.

Examples of accessible serif fonts:

NPS Rawlinson
Century

- Type style and spacing:
  - o Text set in Caps and Lowercase shall be used in most cases, particularly for body copy.
  - o Letter and word spacing shall be adjusted for maximum readability.
  - o Avoid overuse of italic type.
  - o Special effects, such as drop shadows, are acceptable for large display type but not for secondary text or body copy
- Type layout: Flush left, rag right text alignment is easiest to read and should be used in most cases.
- Eye level zone: The smallest type in a vertical exhibit panel should be placed within a zone containing the range of eye level for a person in a wheelchair to a standing adult

for a panel that must be approachable, with no physical barriers. This eye-level zone is approximately 40 inches to 60 inches from the floor. Adjustments would have to be made based on lighting conditions, colors, contrasts, layouts, and other design considerations. This typically applies to the body copy and photo caption type. If type cannot be placed at the appropriate eye level, increase readability with a larger type size, more leading, smaller line length, and/or more contrasting color and background.

- Text behind barriers: Some exhibit text panels are inside artifact cases, behind barriers, or otherwise placed so that the visitor cannot approach closely to the panel or are impeded by reflecting glass surfaces between the visitor and the text. For these kinds of text panels, the type size, leading, line length, and color-background contrast shall be adjusted to maximize readability. Text labels in artifact cases shall be mounted on panels that are placed and angled for maximum readability by a range of people, including people in wheelchairs.

- For more information on typography, see "Publications Guidelines: Visual."

Color and Contrast

- The contrast between the type and the background (either solid tone or image) should be a minimum of 70-percent.

    - Note: The 70-percent contrast percentage is derived from the directional signage requirements in ADAAG (Americans with Disabilities Act Accessibility Guidelines). These specifications are for signage being viewed from a distance of 75 feet with letter sizes of a minimum of 3 inches high on a sign placed 48 to 60 inches from the floor. This guidance is for signage using one or two words, such as "Service Entrance," and not for longer text such as in exhibits or publications.

- Red/Green Combinations: Do not use red on green or green on red as the type/background color combination. The largest percentage of people who have color blindness are unable to distinguish these two colors. (See "Publications Guidelines:

Visual, Color.”)

- Graphic Image/Text Relationships: The use of graphics behind exhibit text can interfere with readability. Make sure that text is readable against the background image.

Contracted (Grade 2) Braille:

- Do not position Braille text below waist height, unless it is intended for children.

- For more information, see “Publications Guidelines: Visual.”

- Samples: During the design process, have samples made for review that show font size, typeface, color, and text/background combinations and labels, including Braille, in the exhibit.

Exhibit Lighting

For people with low vision, adequate lighting is essential.

- Provide sufficient, even light for exhibit text. Exhibit text in areas where light levels have been reduced for conservation purposes should have no less than 10 foot-candles (fc) of illumination, with a working usable range of between 10 and 30 fc.

- Avoid harsh reflections and glare. This includes finishes for text panels that are highly reflective, such as glossy or metallic surfaces. Consider the effect of glare on exhibit text as viewed from a wheelchair. Avoid high-gloss floor finishes, which can create glare.

- The lighting system shall be flexible enough to allow adjustments on-site.

- Transitions between the floor and walls, columns, or other structures, especially protruding objects and overhead structures, shall be made clearly visible. Finishes for vertical surfaces shall contrast clearly with the floor finish. Floor circulation routes shall have a minimum of 10 foot-candles of illumination.

- Detail lights (for exhibits) and navigational lights (for the building) lights must be coordinated to eliminate shadows, especially on text. Shadows may inadvertently be created by nearby objects, portions of exhibit cases, or the viewer's own body.

- Windows shall be treated with film to provide balanced light levels and minimize glare.
- Back-lighting shall be avoided when type or illustration is positive [dark] on a light background. Back-lit text panels or cases should not be placed in front of windows or bright lights (courtesy of Design Guidelines for Media Accessibility, by Parks Canada).

Accessible Lighting Levels		
Element	**lux (lx)**	**foot-candles (fc)**
Ambient Lighting	50-300	4.65 - 27.9
Text Panels	100-300	9.3 - 27.9
Controls	100	9.3
Directional signage	200-300	18.6 - 27.9
Specimens, objects	100-300	9.3 - 27.9
Ramps, stairs	100-300	9.3 - 27.9
Visitor pathways	100-300	9.3 - 27.9
Courtesy Parks Canada, Design Guidelines for Media Accessibility		

Audio Description

Audio description of the museum exhibit as a whole is strongly encouraged and, in many instances, may be required to facilitate effective communication per Section 504 of the Rehabilitation Act of 1973, as amended. (See “Appendix A: Laws, Regulations, and Policies.”)

Frequently, audio description has been used to provide accessibility to exhibits rather than to make the exhibits themselves accessible. Audio description in general, and audio guidance in particular, is only one of many ways to make exhibits accessible. It is not the only solution to consider when planning, designing, and producing accessible exhibits. Audio description should be used for both accessible and inaccessible components of exhibits.

- Tell the story as already described in the exhibit text and images visually, in a form adapted to the audio media and its consequent time limitations.
- Describe and identify the artifacts, models, and other objects on display in cases that cannot be touched by visitors.
- Provide instructions and interpretive information to enhance the visitor’s experience while using tactile models or interactive exhibits.
- Audio description of video programs used in the exhibits is a requirement of Section 508 of the Rehabilitation Act of 1973, as amended.
- Audio description is particularly needed to orient people exploring tactile maps, models, and objects.
- See “Audiovisual Guidelines: Visual.”

Other

Approachable photographs: Some people have difficulty seeing a large exhibit, mural, or architectural feature in its entirety. Consider providing an approachable photograph of the full scene (courtesy of Design Guidelines for Media Accessibility, by Parks Canada).

Exhibits Guidelines: Hearing

Audio components of exhibits may include products like excerpts from oral histories, visitor-selected sound effects of wildlife, and ambient sound that fills the entire room. These components shall accommodate people who are deaf or hard of hearing by providing assistive listening systems and either open captions displayed at all times or some form of printed alternatives. A printed alternative is only appropriate if the person does not need to look at a specific place at a specific time.

- All video programs containing no audio shall be identified with a label or caption that states there is no audio.
- Hearing guidelines apply to mini-theaters incorporated in museum exhibits.
- Handsets, which include, but are not limited to, audio sticks, sound sticks, and telephone receivers, attached to an exhibit must have volume control and be T-coil compatible. The exhibit must also have a visual format available. A printed transcript is appropriate if the person does not need to look at a specific place at a specific time. Open captions are needed where a person needs to look at a specific place at a specific time, such as, but not limited to, videos. (See ABAAS 704.3 for more information.)
- Provide descriptions of ambient sound tracks that are part of the exhibits. This also informs hearing visitors. Add an induction loop, if it is technically possible. When multiple loops are used within an exhibit, their placement must be carefully planned.
- Provide olfactory experiences, but only within a confined space so that visitors can avoid it if they wish.
- Information desks shall allow for Text Telephone service (TTY) equipment. (See ABAAS 704.4-5.)
- For more information, see "Audiovisual Guidelines: Hearing" and "Publications Guidelines: Visual."

Exhibits Guidelines: Cognitive

Text and narrations for visitors with cognitive disabilities are the same as for visitors without cognitive disabilities. There is no separate audio track.

- Present the main interpretive themes on a variety of levels of complexity, so they can be understood by people with varying abilities and interests. Information shall be presented in a clear, hierarchical manner.

- Avoid unnecessarily complex and confusing concepts, unfamiliar expressions, technical terms, and jargon. Pronunciation aids and definitions shall be provided where needed. See examples below:

- Use “a blanket of snow” instead of “a shroud of snow” to describe snow-covered ground.

- Use “he waved” instead of “he gesticulated.”

- Use concise language and simple sentence construction. Avoid unfamiliar words and long paragraphs.

- Audio description shall comply with items above and be presented so that people with varying abilities can understand it. It needs to be consistent with the other interpretive media in terminology and themes and be well organized. It should focus on a limited number of key points and not confuse the listener with too much information. (See “Exhibit Guidelines: Visual” and “Audiovisual Guidelines: Visual.”)

- Easy-to-understand graphic elements and maps shall be used in addition to text to convey ideas.

- Maps will establish a focus and use color and other creative approaches, such as tactile and/or audio elements, to accommodate users of varying map-reading abilities.

- Use a multi-sensory experience with techniques to maximize the number of senses used in the exhibits. For example, many people with autism respond to tactile exhibits.

- The hands-on opportunity at living history areas is helpful to visitors with cognitive and visual impairments.

Exhibits Guidelines: Other

Exhibit Structures

- Wall corners and display-case edges and other things people can accidentally bump into should be rounded. During planning, all structures shall be evaluated from this perspective.

Exhibit Signage

- Access symbols such as, but not limited to, assistive listening systems, Braille, and large print shall be posted by or at information desks to promote accessibility services.

- When permanent building signage is required as a part of an exhibit project, follow guidelines in "Park Signage."

- Signs must be in compliance with ABAAS in all settings where ABAAS applies.

HISTORIC FURNISHINGS

Historically refurnished rooms offer a unique interpretive experience by placing visitors in historic spaces. Surrounded by historic artifacts visitors can feel the spaces "come alive" and can relate more directly to the historic events or personalities the park commemorates.

Access to historic furnishings for people with disabilities is an integral part of the visitor experience at NPS sites and is a significant component of programmatic access. Yet accessibility is a challenge in many furnished sites because of the nature of historic architecture. Buildings were erected with a functional point of view at odds with modern standards of accessibility.

Often, reproductions are used to refurnish an historic space. This is an opportunity to provide tactile experiences. Reproducing essential furniture pieces may enable a person who is visually impaired to benefit and participate in the understanding of the historic period or the historic personage.

The approach used to convey the experience of historically furnished spaces will vary from site to site. The goals remain the same: to give the public as rich an interpretive experience as possible given the limitations of the structure.

- For more information, see www.nps.gov/hfc/products/furnish.
- For information on accessible historic furnishings, see "Exhibits."
- Audio description of intricate furnishings is not always effective.
- For information on accessible historic furnishings plans and reports, see "Publications Guidelines: Visual, Reports."
- For information on alternative methods of presentation, see "Appendix D: Alternative Media Formats."

PUBLICATIONS

The official park brochures and handbooks developed by HFC are known for their reliability, thoroughness, visual appeal, and standard design elements that contribute to NPS graphic identity. The most traditional of the various media, publications remain a core element in a park's interpretive program. As park visitation increases and personal services decrease, the on-site portability of publications give visitors significant interpretive, logistical, and safety information. Publications are the one interpretive medium visitors can take with them as a souvenir and handy home reference. Because publications offer a wide range of information, especially safety, it is critical that people with disabilities receive the same information—of the same quality—as other visitors.

Parks and other NPS offices produce other types of publications for the public. Site bulletins provide more specialized information about a specific site or topic. Park newspapers give visitors access to seasonal or temporary topical information not appropriate for the official park brochure. Planning documents like historic furnishings reports, interpretive plans, general management plans, and conservation reports provide specialized information for park operations and interpretation.

Official park brochures shall list services and facilities available for persons with disabilities (such as TTY phone numbers) and describe significant barriers. Parks can take this a step further by producing a specialized Accessibility Site Bulletin with more detailed information pertinent to visitors with disabilities. A template for this type of site bulletin will be posted on the NPS Graphic Identity Program website. See www.graphics.nps.gov (available only to computers on the NPS network). Note that these site bulletins should be in large print size—18 point minimum—and follow the large print size criteria below.

Publications that are considered "readily available," like the official park brochure, newspaper, and site bulletins, must also be provided in all alternative formats—Contracted (Grade 2) Braille, large print, audio description, and electronic (word processing format on the Internet and disc). To estimate the quantity of each format to keep on hand, determine the percentage of total park visitors needing each format and anticipate how long each format edition will remain current.

Like the standard-size publication that is given to visitors to keep, alternative format publication users may permanently keep their publications.

For publications that must be ordered, the same turnaround time is required as for standard print publications.

The HFC Editorial Style Guide is a valuable resource for promoting clarity and consistency in publications, which are essential elements of universal accessibility. (See www.nps.gov/hfc. Click "HFC Style Guide.")

For more information, visit www.nps.gov/hfc/products/pubs.

Publications Guidelines: Mobility

- Park brochures, site bulletins, and sale items shall be distributed from accessible locations and heights. (See "Exhibits Guidelines: Mobility.")
- Park brochures and Accessibility Site Bulletins shall carry information on the accessibility of facilities, trails, and programs.
- Publications shall not have complicated folds. They must be able to be unfolded with the use of one hand.

Publications Guidelines: Visual

Publications—Standard Print Size

Text (standard print size)/Fonts

- Making fonts accessible is more than choosing the right font. It is also the proper use of the font: size, line length, leading, letter and word spacing, color, contrast, etc.
- For information about accessible font proportions, see www.si.edu/opa/accessibility/exdesign/start.htm (Label Design and Text, Fig. 13).
- The standard NPS typefaces are sans-serif Adobe Frutiger Open Type and serif NPS Rawlinson Open Type. For more information, see www.graphics.nps.gov/typefaces.htm (available only to computers on the NPS network).

Examples of accessible sans serif fonts include Arial, Frutiger 55 and 65, Helvetica (regular and bold), Univers 55 and Futura. Examples of accessible serif fonts include NPS Rawlinson, Century, Time Roman and New Century Schoolbook. See visual examples below.

Sans-Serif: Arial
Frutiger 55 and **65**
Helvetica (Regular and **Bold**)
Univers 55
Futura

Serif: NPS Rawlinson
Century
Times Roman
New Century Schoolbook

Examples of non-accessible sans-serif fonts are Helvetica (light and black) and Univers 45. Examples of non-accessible serif fonts are NPS Rawlinson italic (can be used for occasional scientific name, small quote, etc.), Time bold, New Century Schoolbook (Bold), Decorative, Script, Eccentric STD and Brush Std. See visual examples below.

Sans-Serif: Helvetica (Light and **Black**)
Univers 45

Serif: *NPS Rawlinson italic*
(can be used for occasional scientific name,
small quote, etc.)
Times Bold
New Century Schoolbook (Bold)

Decorative and *Script*: ECCENTRIC STD
Brush Script Std

- The selection of fonts should be considered based on the recommendations of organizations that specialize in determining accessible fonts. The following organizations have done extensive research on fonts: American Printing House for the Blind, American Foundation for the Blind, and Lighthouse International.

- Select and define a type hierarchy based on the organization of the content. Various typographic devices can help differentiate text: size, type weight, numbers, letters, bullets, heads and subheads, and placement. No extremely extended or compressed typefaces shall be used for body text. For display type, use condensed or extended type treatments sparingly.

- Avoid overuse of italic type. Most organizations representing people with low vision recommend against the use of italic type since it is difficult to read for those with vision loss. A suitable alternative to italics, such as book titles and ship names, is the use of "quotation marks."

- Type Size: Use the largest type size appropriate for the layout, line length, and font characteristics. A suggested size for body text is 10 or 11 point, depending on the font weight, spacing, and line length (column width). Smithsonian Institution and SEGD guidelines recommend 12-point type.

- Type layout/Alignment:

- Flush left, rag right text alignment is easiest to read and should be used in most cases.

- Line length depends on the font's letter forms and point size selected.

- Font size equivalent: Keep in mind that different fonts appear to be different sizes, even when specified at the same size. If a font appears too small, simply increase its point size. For example:

    - Arial 16 Point, 18 Point

  - Times New Roman 16 Point, 18 Point
  - Garamond 16 Point, 18 Point

- Leading: Leading is the measure from the base of one line to the base of the next line. It shall be at least 20-percent greater than the font size used. Example: 10-point type on 12-point leading.
  - Select a type size and leading for the primary text that is appropriate for the width of the column, size of the page, and format. Example: Frutiger 10 point on 12-point leading may be as easy to read as NPS Rawlinson 11 point on 13-point leading.
- Proportional letterspacing: Frutiger and NPS Rawlinson are both proportionally letter-spaced, making them easier to read as body text. Courier is not proportionally letter-spaced. See examples below.

Frutiger has proportional letterspacing; **mmm** is wider than **iii**.

NPS Rawlinson has proportional letterspacing; **mmm** is wider than **iii**.

Courier does NOT have proportional letterspacing; **mmm** is the same width as **iii**.

- Use the standard typographer's quotes, apostrophes, dashes, and other punctuation. Word processing and page layout programs provide preference menus that allow for these choices.
- Body text and most display type should be set in Caps and Lower- case. Reserve ALL CAP usage for short headlines or brief safety warnings. Caps and Lowercase text is

easier to read than ALL CAPS.

- Use hyphenation sparingly to avoid extremely long or short lines. Avoid using more than two consecutive hyphenated lines.
- Avoid underlining. Use italics, bold, or another type device for emphasis. If underlining must be used, make sure it does not touch the underlined letters.
- Reversed-out type (such as white on a black background) should be at least 11-point, medium or bold, sans-serif.
- Avoid reversed-out type for documents produced on low-end home or office printers.
- Inks and toners should be applied neither under-inked nor over-inked, for clear, crisp letter forms and image details.
- Contrast of typeface to background shall be between 70-percent and 95-percent. Avoid 100-percent black type on white paper to reduce glare. Use 100-percent black type on a five-percent toned background or neutral tones paper stock instead. For an explanation, see “Exhibits Guidelines: Visual, Color and Contrast.”
    - A simple test for contrast is to make a black-and-white photocopy of the image-text combination without adjusting the photocopier for contrast. Then check the readability.
    - A more accurate test would be to change the image/text combination to gray tones in a software like Adobe Photoshop, then take a reading of the percentages of gray with the eye dropper tool. The test image resolution should be at least 300 dpi for photos and 1200 dpi for line art and text.
    - Using Adobe Photoshop, make a copy of your image. Using the copy:
        - Go to Image>Mode>grayscale

- Open Windows>Info box
- Choose the eye dropper tool
- Choose sample size of at least 5 x 5 average pixels
- Click the eye dropper tool on the background
- Check Info box for K (Black) percentage

Graphics (Standard Print Sizes)

- Photographs should have a wide range of grayscale variation. Select black-and-white or color images that have a focused subject and uncomplicated surroundings, especially for printing on low-end printers.
- Line drawings and floor plans should be clear with limited detail, line weights, and tones. Labels should be 8-point minimum.
- If printing in high quantities on commercial offset presses, for example through the Government Printing Office (GPO), image resolution should be at least 300 dpi for photos and 1200 dpi for line art.

Paper (Standard Print Sizes)

- For low-end printers, the paper should be typical plain stock available in offices and homes. (This is important if site bulletins will be posted online for users.)
- For offset printing the vendor should specify a paper quality appropriate for the product. To match the Unigrid brochure paper, ask for: white no. 1 coated text, dull-finish, basis weight 70 lbs. per 500 sheets, 25 by 38 inches, equal to JCP Code A261. Use 60 lb. paper as an alternate, but be aware that one side may “show through” to the other.

- For other publication types, see the NPS Graphic Identity Program website, www.graphics.nps.gov (available only to computers on the NPS network).

Publications (Large Print Size)

- Publications that are considered "readily available" shall be available in large print size. See "Publications" introduction about quantity and users being allowed to permanently keep the large-print format.

- Templates of NPS large-print brochures and maps are posted on the NPS Graphic Identity website, www.graphics.nps.gov/templates.cfm (available only to computers on the NPS network). Templates and other large-print information are also at www.nps.gov/hfc/products/pubs/pubs-large-print.htm.

- Rather than simply being enlargements of the original brochures, large-print editions represent a synthesis of the content that is tailored especially for their audience.

<u>Text (large print size)</u>

- Fonts: Making fonts accessible is more than choosing the right font. It is also the proper use of the font: size, line length, leading, letter and word spacing, color, contrast, etc.

    - Use sans-serif fonts. The standard NPS sans-serif font is Adobe Frutiger Open Type. For more information, see www.graphics.nps.gov/typefaces.htm (available only to computers on the NPS network).

        - The following organizations have done extensive research on fonts: American Printing House for the Blind, American Foundation for the Blind, and Lighthouse International. All three of these organizations recommend the use of sans-serif fonts for accessible large-print publications.

- Do not use extremely extended or compressed fonts.

- Do not use italics or decorative fonts. See examples below.

Do not use extremely **extended** or **compressed** fonts.

Do not use *italics* or **decorative** fonts.

- Examples of Sans-Serif accessible fonts include Frutiger 55 and 65 and Arial. See visual examples below.

Sans-Serif: Frutiger 55 **and 65**
Arial

- Minimum Type Sizes:
    - Titles—55 point
    - Introduction—28.5 point
    - Body text—18 point
    - Headings—22 point
    - Captions—16 point
- Leading:
    - Text—18 on 22 point
    - Introduction—28.5 on 35 point
    - Captions—16 on 20 point.

- Use a font with proportional letterspacing, like Frutiger.
- Body text shall be set in Caps and Lowercase.
- Alignment shall be flush left and rag right. Avoid justified text.
- Use vertical lines (1.5-point minimum) to separate text columns.
- Gutter widths shall be a minimum of 22 mm; outside margins may be smaller, but not less than 12 mm.
- Do not hyphenate words at ends of lines unless absolutely necessary to avoid extremely long or short lines. (It is better to rewrite the sentence.)
- Avoid underlining. If underlining is used, it shall not touch the underlined letters.
- Use two letter spaces between sentences, so that sentences have a visually distinct end and beginning.
- Use a maximum of 41 to 46 characters (average) per line of 18-point body text.
- Paragraphs: Use one line space open between paragraphs.
- Do not indent paragraphs.
- Inks and toners should be applied neither under-inked nor over-inked, for clear, crisp letterforms and image details.
- Do not print type over other competing textures (background, photos, graphics, etc.). Type printed over some solid tones is acceptable. (See "Publications Guidelines: Visual, Publications—Standard Print Size, Text, Contrast.")

Graphics (large print size)

- Photographs, diagrams, maps, etc. that accompany the text—should be enlarged accordingly, without distortion, loss of detail, contrast, focus, or clarity of image.

- Photographs may be color or black-and-white.
- A photograph's primary subject should clearly contrast with the surrounding content.
- Line drawings or floor plans should be clear and bold, with limited detail and a minimum type size of 16-point for labels.

Color (large print size)

- Color Contrast: For information, see "Effective Color Contrast" by Aries Arditi, Ph.D., at http://li129-107.members.linode.com/accessibility/design/.
- Color combinations influence readability of text. Recommended color combinations include black/white, black/yellow, dark blue/white, dark green/white. Avoid yellow/grey, yellow/white, blue/green, red/green, and black/violet (courtesy of Design Guidelines for Media Accessibility, by Parks Canada).
- Color blindness: See "Publications Guidelines: Visual, Maps—Large Print."

Paper (large print size)

- Surface should reduce glare. Dull, coated white stock allows crisper letter forms.
- Paper should have sufficient weight to avoid "show-through" on pages printed on both sides.

Folds (large print size)

- Fold configuration should be as simple and easily understood as possible.
- Multi-page documents should have a flexible binding that allows the opened publication to lie flat.

Maps

Maps are an important component of orientation, wherever the orientation takes place—information desk, brochure, indoor or outdoor exhibits, or website. Some maps focus on important park features, while others provide topographical information. Still others give interpretive information. People with disabilities must receive the same benefit as people without disabilities.

Maps--Standard Print Size

- Avoid irrelevant information that adds clutter.
- NPS maps in digital formats are available at www.nps.gov/carto. The specifications for these maps may be obtained by downloading the Adobe Illustrator files and checking the attributes within the file.
- Paper: See "Publications Guidelines: Visual, Publications—Standard Print Size."
- Contrast of typeface to background shall be at least 70-percent. For an explanation, see "Exhibits Guidelines: Visual, Color and Contrast."
- Proportional letterspacing: See "Publications Guidelines: Visual, Publications—Standard Print Size."
- Labels shall be set in Caps and Lowercase except for large areas like oceans or mountain ranges. See visual examples below.

Pine Picnic Area

PACIFIC OCEAN

- Map notes shall be set flush left and rag right.
    - Little or no hyphenation shall be used at ends of lines.

- o No compressed typefaces shall be used. Example:

No compressed typefaces :

- o Extended typefaces shall be used only to identify large areas on the map. Examples:

EXTENDED typefaces

ROCKY MOUNTAINS

- Fonts: Use sans-serif, like Frutiger or Helvetica. A serif typeface may be used for specialized purposes such as providing a historic look.

Maps--Large Print Size

Produced primarily for visitors with low vision.

For a prototype large-print map, visit www.nps.gov/hfc/carto and select "Chesapeake and Ohio Canal National Historical Park" (CHOH). Compare to the standard print size. The specifications for these maps may be obtained by downloading the Adobe Illustrator files and checking the attributes within the file.

A template of an NPS large-print brochure and map is posted on the NPS Graphic Identity website, www.graphics.nps.gov/templates.cfm (available only to computers on the NPS network).

- These specially designed large-print maps and brochures produced for C&O Canal were critiqued by low-vision specialists from several national organizations representing people with low vision. Many factors were considered including readability and functionality.

Color blindness: People with color blindness cannot distinguish colors in the way that those with normal vision can. The condition is most commonly inherited. Red/green color blindness is by far the most common form of this condition.

- The large-print map for the C&O Canal brochure was also designed to accommodate red/green color blindness. This map can be a guide for the development of other park maps to solve the same problem.
- To see how a map or image appears to viewers with various forms of color blindness, visit www.vischeck.com (Windows) or
- http://colororacle.cartography.ch (Windows, Macintosh, and Linux).

Converting standard-print maps to large-print maps:

- Background tone: Avoid bright white; it creates excessive glare.
- Critical information: Use a ½-inch margin.
- Focus: Generalize and/or widen line weight or feature.
- Line weights: 3-point is preferred; 2-point is minimum.
- Roads: Consider which roads are truly needed for interpretive purposes. Avoid creating solely a "driving map."
- Use the map background color rather than white for the road shield background color to avoid glare.
- Type: Use a sans-serif font like Frutiger. For a heavier weight, use Frutiger Bold rather than Frutiger Black, which is too thick.

- For state names, use Roman font, 100-percent black instead of gray. State names may be placed in an open area, not necessarily along a state line.
    - For drainage labels, keep words together rather than spacing out too widely. Use 18-point type.
    - Use en dash in place of a regular hyphen.
    - Use 18-point, 100-percent black, Caps and Lowercase type for most labels (Frutiger was used on the C&O map). Show type hierarchy by applying other styles such as larger, bolder, ALL CAPS (use only for large areas, like oceans and mountain ranges), color, etc.
- Mileage Markers:
    - Use 15-point black type. This is a minor feature on the map. Do not use any type under 15-point.
    - Add the label "milepost" to the highest and lowest milepost on the map. This makes it easier to distinguish the other milepost numbers. Also add the label "milepost" to the legend.
- Symbols: Limit symbols to just two or three. Use basic shapes (square, triangle, etc.) rather than the standard NPS pictograph figures.
- Town circles: Make all of these a uniform size.
- Locator dots and squares: increase their size.
- State lines: Use dashed lines, 70-percent black.
- Place a holding line (2-point) around the legend.
- Use a 2-point holding line for the distance measure scale.

- Use a simple compass rose to indicate "north" (and other directions).

- Numbers, symbols, letters, lines, etc. need a light background around them to stand out as a single feature. Do not place map objects adjacent to one another without space between them.

Tactile Maps

- There are many factors that make tactile maps accessible and functional for people who are blind, including size, depth, location, audio description, texturing, keys, legends, and degree of detail.

- Tactile maps may provide the primary information for people who are visually impaired, but they also benefit persons with cognitive disabilities, children, and all other visitors as they provide visual stimulation through their three-dimensional presentations.

- Raised-line or tactile maps can be made using our present digital files and, for example, a thermoform machine. Lines are distinguished by line weight, color, and height. Areas are distinguished by color, height, and texture. NPS digital maps are available at www.nps.gov/carto.

- Tactile maps are currently being developed by the NPS. Visit www.nps.gov/hfc/accessibility for more information on tactile maps.

Audio Formats

- Publications that are considered "readily available" shall be available in an audio format on CD or MP3 and the NPS individual park websites. Graphics shall be audio described.

- See "Publications" introduction about quantity and users being allowed to permanently keep the audio format.

- The audio version shall present clear, high-quality sound.

- All AV devices should enable users to forward and reverse throughout the entire program.

- The audio version shall be sound-indexed for easy choice of starting and stopping points for listening.

- Where possible, depending on the equipment used, variable speech output speed should be available.

- For additional information, see "Appendix D: Alternative Media Formats."

Electronic (Word Processing) Formats

- Publications that are considered "readily available" shall be available in an electronic (word processing) format on CD and the NPS individual park websites. Graphics shall be described.

- Use Microsoft Word as the format. Microsoft Word includes accessibility attributes. Do not use columns or tables because these cannot be translated by computers.

- See "Reports" below. Also see "Publications" introduction about quantity and users being allowed to permanently keep the electronic format.

- For additional information, see "Appendix D: Alternative Media Formats" and "Reports" below.

Braille

- Publications that are considered "readily available" shall be available in Contracted (Grade 2) Braille, and shall comply with ABAAS 703.3 and 703.4. See "Publications" introduction about quantity and users being allowed to permanently keep the Braille publication.

- Braille shall be produced in full conformance with the currently applicable codes set forth by the Braille Authority of North America (BANA). The BANA codebook is English Braille, American Edition. Use the latest edition. For more information, see www.brailleauthority.org.

- Do not use Jumbo Braille (large dot Braille).
- Do not combine large print and Braille in the same document.
- Format: Use 8.5 x 11-inch paper format for documents under 80 pages (printed on both sides of the paper). The older 11.5 x 11 format is too awkward and clumsy.
- Interpoint: The Braille should print on both sides of the paper to keep the bulk and price down.
- Descriptions of graphics, including maps: Like the audio format, the interpretive graphics need to be described in Braille for effective communication.
    - Use 50 words maximum for a single graphic.
    - Not every graphic has to be described. Choose the ones that add to the interpretation of the park.
    - Note: the graphic descriptions for the audio format and the graphic descriptions for the Braille format should be the same, thus helping the production cost.
- Tactile graphics enhance a sense of space, distance, area, size, and scale.
- Braille printing houses can advise which graphics can be made tactile. They have experience in this field and can provide cost estimates as well.
- More information on producing a Braille format, including transcribing, proof-reading, quality assurance, paper stock, bindings, and how many to print, will be available at www.nps.gov/hfc/products/pubs/pubs-braille.htm.

Reports

- Reports shall be accessible (electronic versions for people with visual impairments) for park employees and the public.

- Plain text and HTML files are the most likely to be accessible to all computer users who are blind. The electronic reader of the computer can read the content of the document to the user. The computer can only describe a graphic if an "alt tag" with a description is used. We recommend using Microsoft Word. Most people either use Microsoft Word or have methods to convert files.

- Electronic readers can best read the sans-serif font Arial without italics.

- Other Specialized Formats: The following is from A Guide to Making Documents Accessible to People Who Are Blind or Visually Impaired by Jennifer Sutton, published and copyrighted 2002 by the American Council of the Blind, www.acb.org/accessible-formats.html#ag16.

> Adobe and Microsoft have made efforts to accommodate blind and visually impaired people who need to read documents generated by their specialized software. Companies' efforts to work with assistive technology vendors to resolve compatibility issues have been somewhat successful. Accessible documents in Microsoft's Reader format or in Adobe PDF must be constructed in very specific ways, be created with particular settings enabled, and generated in this file format. It is risky to assume that everyone can open a Microsoft Word document and follow guidelines that Adobe and Microsoft each outline. To get started with producing Adobe documents, see the booklet "How To Create Accessible Adobe PDF Files." For information about creating accessible Microsoft Reader® files, see " Microsoft Reader—Accessibility Frequently Asked Questions."
>
> In addition to being sure that documents meet these criteria, a company should be aware that blind or visually impaired people must have technology that

conforms to Microsoft's requirements, they must have downloaded Microsoft's Reader software, and they must have it configured to read accessible texts. In order to read Adobe's PDF documents, people must again have the most up-to-date assistive technology software, and they must install and configure the necessary Adobe plug-in. Even accessible documents in these formats do not always allow for maximum flexibility and user preferences with respect to reading, printing, or portability.

So, while these documents can and should be made available in a specialized format to those people who choose to use them in that format, offering another universally accessible document-type, such as HTML or plain text, is advisable. Though specialized formats allow the document to be read by sighted people exactly as intended, these formats are not nearly as useful and friendly to blind readers.

- Optical Character Recognition (OCR) software on scanners can interpret type, but not graphics. It is a tedious process and not an efficient way to read a document.
- Where reports should be available:
    - Reports shall be posted online for easy access.
    - NPS Media Inventory Database System (MIDS): www.hfc.nps.gov/mids (available only to computers on the NPS network). Park staffs are responsible for posting reports to MIDS.
    - Park Websites: www.nps.gov. Be aware that if there is copyrighted material in the report, it cannot be posted on a public site without permission from the copyright holder(s). Be sure to reference the artist/owner. If in doubt, post a version without the copyrighted material.

Publications Guidelines: Hearing

- The park-produced Accessibility Site Bulletin and newspaper shall note the availability of programs that provide qualified sign language (and cued speech) interpretation, captioning, transcripts, and assistive listening devices. The publication should provide information on how to obtain these services. (See "Audiovisual Guidelines: Hearing/Ranger (Docent)-Led Tours" for the definition of "qualified interpreter.")

Publications Guidelines: Cognitive

- The park-produced Accessibility Site Bulletin and newspaper shall list programs available for visitors with cognitive disabilities.

- Text for visitors with cognitive disabilities is the same as for visitors without cognitive disabilities.

- Some people with dyslexia need audio rather than print material.

- (See "Exhibits Guidelines: Cognitive.")

WAYSIDE EXHIBITS

Wayside exhibits are large-format outdoor sign-like exhibits that the National Park Service employs either to orient visitors arriving to a new location, or to reveal the stories hidden in the view. These panels combine photographs, artwork, diagrams or maps, and texts that are written to be easy to read aloud. The goal is both to describe the landscape and to reveal the significance of an outdoor place being preserved as part of the National Park System.

To make sense, waysides must be placed where a particular story intersects a particular view. Most NPS waysides are installed at trailheads, vistas, overlooks, or along front-country trails. Since NPS waysides are usually near sidewalks, hardened-surface trails, and parking areas, most are accessible to wheelchair users. But some waysides will be inaccessible to visitors with limited mobility, due to rough trail conditions and grades.

NPS managers and interpreters must constantly keep in mind that standard waysides provide little benefit to visitors who cannot see. Old-style audio message repeaters that the NPS formerly installed alongside waysides have not solved this problem because the hardware often fails outdoors. Audio technologies are emerging that can provide visitors who are blind or visually impaired access to the information that waysides deliver. While these guidelines may not specify the exact method, some method is required to make waysides accessible to visitors who are blind or visually impaired.

Because waysides are outdoors, color choices in panel design matter. Glare from sunlight must be avoided. Constant exposure to strong sunlight fogs and fades ink pigments so that lettering falls below legibility limits. Program accessibility is not just a matter of installing accessible waysides. Wayside exhibits are a prime example of an why an NPS program must be maintained in order for it to continue to be accessible. A regular inspection and panel replacement routine will keep waysides looking their best and solve many legibility problems.

Providing arriving visitors with basic orientation to an NPS site is a program; therefore it must be available to all visitors and delivered in an equitable fashion.

Good waysides should direct attention to the features they interpret, not to themselves. Writing should be focused and compressed. Waysides that work best avoid complex topics and multiple layers of information. Graphic elements must be organized to be powerful enough to draw visitors into the story.

For more information, visit www.nps.gov/hfc/products/waysides/way-process-access.htm. (See "NPS Wayside Exhibit Map Standards" and "NPS Wayside Exhibit Typographic Standards.")

Wayside Exhibits Guidelines: Mobility

- Wayside exhibits shall be installed at wheelchair-accessible locations wherever possible. (See "Exhibits Guidelines: Mobility.")

- Wayside exhibit panels shall be installed at heights and angles favorable for viewing by all visitors, including wheelchair users. For standard NPS low-profile exhibits (angled at 30 or 45 degrees) the recommended height is 32 inches from the bottom of the exhibit frame to finished grade; for upright exhibits and bulletin boards the height is 24–36 inches from the bottom of the exhibit frame to finished grade, depending on panel size.

- Trailhead exhibits shall include accessibility advisory information.
- Wayside exhibits shall have level, firm, hard-surfaced, and slip-resistant exhibit pads.
- Exhibit sites shall offer clear, unrestricted views of park features referred to in the exhibits.
- Park staff shall also consider posting wayside content (excluding copyrighted material) on the park website.

Wayside Exhibits Guidelines: Vision Loss

- Exhibit typography shall be legible and readable and conform to the "NPS Wayside Exhibit Typographic Standards," www.nps.gov/hfc/pdf/waysides/type-standards.pdf.
- Panel colors shall be selected to reduce eyestrain and glare and to provide excellent readability under field conditions. Because of its reflectivity, white shall not be used as a background color.
- Selected wayside exhibits shall incorporate tactile elements like models, texture blocks, and relief maps using raised lines, base relief, or three dimensional.
- Selected wayside exhibits shall incorporate audio stations that include audio description. (See "Exhibits Guidelines: Visual.")
- For all major features interpreted by graphic wayside exhibits, the park staff shall offer non-visual interpretation (i.e. audio description) of the same subject matter. Examples include audio tours like digital audio players, radio systems or dial-up messages for cellular phone users, and ranger talks.

- Park staff shall also consider posting wayside content on the park website. Be mindful of copyright restrictions.

Wayside Exhibits Guidelines: Hearing

- Wayside exhibit panels shall communicate visually and will rely heavily on graphics to interpret park resources.

- Other information in audio station messages (music, sound effects, etc.) shall be available in alternative formats: as part of the exhibit, transcript, captioning via a hand-held mobile device, or assistive listening systems via a hand-held T-coil compatible mobile device with headsets and neckloops available. Note: Hand-held devices require fewer repairs or replacements than built-in outdoor equipment. These devices must be available during all times when visitors can access the waysides and not just when visitor centers are open.

- For more information see "Exhibits Guidelines: Hearing" and "Audiovisual Guidelines: Hearing."

Wayside Exhibits Guidelines: Cognitive

- Text and narrations for visitors with cognitive disabilities are the same as for visitors without cognitive disabilities. There is no separate audio track.

- Text shall be concise, with short paragraphs.

- For more information, see "Exhibits Guidelines: Cognitive."