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APPENDIX 1: Metric Conversion for Highway Design Standards

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All photographs in this document are by Rick Phillips (Parsons Transportation Group) except where otherwise noted.

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Cover Graphics and Design by David Meyers , Whitney Fisher and George Sistek.

1.0 Purpose

These guidelines support the Big Sur Coast Highway Management Plan (CHMP) which seeks to identify and encourage a coordinated management approach to a 75-mile stretch of Route 1 extending from San Carpoforo Creek in San Luis Obispo County to the Carmel River in Monterey County (Figure 1).

Figure 1: Location map for the Big Sur Coast Highway Management Plan.

The purpose of these guidelines is to provide a vision and guidance for decisions that influence the overall aesthetic and visual character of the Highway 1 corridor along the Big Sur Coast. These guidelines are intended to provide a source of values and direction when actions are contemplated, proposed or undertaken in the corridor. The areas of focus range from highway construction, maintenance and operational practices to roadside features within and beyond the highway right-of-way. Achieving the desired aesthetic along the corridor will require cooperation, collaboration, and good will, as no single entity has authority over all decisions that can affect the visual quality.

The guidelines are produced in the spirit of promoting solutions that are sensitive to their overall context of social, historic, scenic and environmental values. For Highway 1, the objective is to honor the corridor's unique qualities while protecting traveler safety and providing for essential transportation needs.

Context Sensitive Solutions is fast becoming a familiar term that embraces the concept of more fully integrating community and environmental values in transportation project planning, design, construction, maintenance, and operations[1]. In the mid-1990's, this concept began to emerge from increasing public and community resistance to traditional approaches for solving transportation needs. In response, Caltrans has placed an increasing emphasis on Context Sensitive Solutions; its policy now encourages the pursuit of solutions that meet transportation goals in harmony with communities and natural environments. In part, the policy states: "…These solutions use innovative and inclusive approaches that integrate and balance community, aesthetic, and environmental values with transportation safety and performance goals."[2]

In furthering its commitment to the new approach, Caltrans recently published a guide entitled *Mainstreets: Flexibility in Design and Operations* (July 2002). This document serves as a resource for communities and seeks to heighten awareness about the degree to which flexibility exists in the design process and how stakeholders can become more involved in the decision-making process.

The CHMP represents Caltrans' commitment at a very local level to seek solutions for the Department's long-term management of the highway corridor that balance mobility, safety, community values and the environment. The CHMP has been developed in partnership with agency and community stakeholders along the corridor. These *Guidelines for Corridor Aesthetics* seek to broaden a collective understanding of stakeholder values and serve as a tool to guide future decisions. Working together, the stakeholders will strive to preserve the essence of the scenic qualities in the corridor while ensuring that the principles for a safe and reliable transportation facility are also upheld.

1.1 Background

History

The Big Sur pioneer and ranching families built the forerunner to the northern section of the contemporary Highway 1 in the late 1800s. Monterey County assisted in the construction of this roadway, known then as the Coast Road, which provided access from the Monterey Peninsula south into the upper reaches of the Big Sur. The Coast Road was adopted into the county road system for maintenance.

Over a 20-year period spanning the turn of the 20th century, John Roberts, a physician from Monterey who served the Big Sur settlers, mapped a likely highway route and rallied the local community to support construction of a highway. In 1915, with State Senator Elmer Rigdon of Cambria as his ally, Dr. Roberts successfully presented his case on behalf of the Carmel-San Simeon Highway to a joint session of the California state legislature. He promoted the highway for two reasons: to fill a practical need to improve access to a remote region and to make the breathtaking landscape more accessible to touring visitors.

[1] *National Cooperative Highway Research Program Report 480.* Transportation Research Board 2002
[2] Caltrans Director's Policy No. 22, November 2001

The people of California supported the concept of the Carmel-San Simeon Highway along a nearly 100-mile length of coast[3] when they approved a bond for its construction in 1919. Construction began in 1922 but was suspended between 1924 and 1928 after laborers and engineers realized how difficult and complex the project would be. The highway was finally completed in 1937.[4]

In 1965, Highway 1 in Monterey County along the Big Sur Coast was designated a State Scenic Highway, the first California highway to be so distinguished. In 1996, it became one of the nation's first "All American Roads," the highest designation offered by the Federal Highway Administration under the National Scenic Byways Program. Highway 1 in San Luis Obispo County[5] became a designated State Scenic Highway in 1998 and a national All American Road in 2003. These designations invoke special consideration for actions to protect the corridor's unique qualities.

Notwithstanding the scenic views of the landscape from the highway, elements from the original construction of the highway itself in the 1920s-1930s have special status. The best examples of workmanship from the original highway construction include the seven remaining concrete arch bridges and over 300 rock masonry features including retaining walls, parapets, culvert headwalls and drinking fountains. These rock masonry features are important because they possess artistic value, as they harmonize with the natural and rugged environment along the Big Sur Coast, in a style that was popular in rural areas of the state throughout the Depression.[6] This collection of features, described as the Carmel-San Simeon Highway Historic District, has been determined eligible for listing in the National Register of Historic Places.

Notable national recognition has also been granted to the offshore areas with the establishment of the Monterey Bay National Marine Sanctuary in 1992 and the California Coastal National Monument in 2001. The Marine Sanctuary encompasses an extensive reach of the Pacific Ocean from Cambria in San Luis Obispo County to the San Francisco Bay. The national monument status affords protection to the offshore rocky outcrops and pinnacles above tidal waters, extending the entire length of the state of California.

[3] San Simeon lies some 20-miles south of San Carpoforo Creek in San Luis Obispo County
[4] *Historic Resources Evaluation Report*, Caltrans District 5, 1996.
[5] From the San Luis Obispo city limits to the Monterey County line, approximately 57-miles.
[6] *Historic Resources Evaluation Report*, Pavlik 1996, 17.

Figure 2: A view to the marine sanctuary beyond Bixby Creek Bridge from Old Coast Road, an inland portion of the route that was bypassed with the bridge's completion in 1932. The concrete arch-spandrel is a signature element of the historic bridges that contribute to the Carmel-San Simeon Highway Historic District.

Preserving the scenic and natural qualities of the environment through which Highway 1 passes has been a consistent theme of local, county and state planning for well over 50 years. More recently, focus has also been on protecting the long-term viability of the communities through which the highway passes. pThe most broadly applicable documents are the California Coastal Act of 1976 and the Big Sur Coast Land Use Plan of the Monterey County Local Coastal Program, 1986. The Big Sur CHMP supports and responds to these efforts and the resulting planning policies.

California Coastal Act

The California Coastal Act, adopted by the State of California in 1976, includes a comprehensive set of policies to preserve and protect the California Coast. The Coastal Act, administered by the California Coastal Commission, was established to regulate development in the Coastal Zone and provide public access to the coastal resources held in the public trust: the shoreline and its beaches. The Commission's jurisdiction over development extends to other state agencies and local governments with lead agency responsibilities for any coastal development. The Coastal Act also provides for delegation to local jurisdictions with certified Local Coastal Programs (see following section).

Specific Coastal Act policies that are applicable to these guidelines include:

> **PRC Section 30254:** "…it is the intent of the (California) Legislature that State Highway Route 1 in rural areas of the Coastal Zone remain a scenic two-lane road."

PRC Section 30251: "The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas."

Monterey County Local Coastal Program

The Big Sur Coast Land Use Plan (LUP), adopted as part of Monterey County's certified Local Coastal Program (certified in 1986, amended 1996)[7], sets forth the following basic goal:

"To preserve for posterity the incomparable beauty of the Big Sur country, its special cultural and natural resources, its landforms and seascapes and inspirational vistas. To this end, all development must harmonize with and be subordinate to the wild and natural character of the land."

In support of this goal, Monterey County's key policy in terms of coastal scenic resources (Section 3.2.1) is to prohibit all future public or private development within the critical viewshed[8] and major public viewing areas along or off the highway.

The critical viewshed policy is central to the restrictions on development along the Highway 1 corridor. Highway 1 itself is also recognized for its role in maintaining the essential character of the coast. Another key policy of the LUP states the objective to maintain and enhance the highway aesthetic and to protect its primary function as a recreational route; in particular, the following general policy is noteworthy in the context of these guidelines:

- A principal objective of management, maintenance, and construction activities within the Highway 1 right-of-way shall be to maintain the highest possible standard of visual beauty and interest. (Section 4.1.2)

Since Highway 1 provides the very foundation that defines the critical viewshed, the LUP affords reasonable exemptions from this policy for some types of development related to the highway. Scenic resource protection policies of the LUP provide guidance for design of exempt highway features as follows:

- Design and materials used for highway elements (e.g., signs, guardrails, restrooms) should be complementary to the rural setting and character of the Big Sur Coast, with preference for natural materials (Section 3.2.5.C.1).

[7] The Monterey County General Plan update, underway as of this writing, will supercede and replace the LUP. This may result in changes to the policies cited above. For purposes of this document, the policies refer to the document certified by the California Coastal Commission in 1986.

[8] Critical viewshed is defined in the LUP as, "everything within sight of Highway 1 and major public viewing areas including turnouts, beaches and the following specific locations: Soberanes Point, Garrapata Beach, Abalone Cove Vista Point, Bixby Creek Turnout, Hurricane Point Overlook, upper Sycamore Canyon Road (Highway 1 to Pais Road), Pfeiffer Beach/Cooper Beach, and specific views from Old Coast Road as defined by policy 3.8.4.4".

- Highway signs should be evaluated on a regular basis (every three years) and unnecessary signage should be removed (Section 3.2.5.C.1).

Scenic resource management policies that apply to areas adjacent to Highway 1:

- New road construction and earthwork must not damage or intrude upon the critical viewshed (Section 3.2.3.A.4).
- Ocean views from Highway 1 must not be obscured by artificial berming/mounding or landscaping (Section 3.2.3.B.1).

Furthermore, the interest in managing Highway 1 as an important resource that provides for coastal access is elaborated in a dedicated section of the LUP. Policies applicable to these guidelines are paraphrased below:

- Existing roadside parking should be managed for (1) traffic and pedestrian safety, with emphasis on correcting the potential for conflicts in high visitor use areas (e.g., adjacent to individual State Park units and commercial areas); and (2) protection of sensitive habitats and important views. Design of parking areas should emphasize the need to include designated entrances and exits (Sections 4.1.3.A.3 and 4.1.3.B.1).
- The eradication of non-native plant species and replacement with native species should be afforded attention (Section 4.1.3.B.2).
- Public restrooms should be provided, where consistent with scenic protection and other resource management policies, at major destination points, major public viewing areas and developed public recreation sites along Highway 1; consideration should be given to providing trash receptacles; and a program for litter control must be undertaken (Section 4.1.3.B.3).
- Paved turnouts should be provided for slow-moving vehicles at appropriate locations (Section 4.1.3.A.2).
- The highway upgraded to 12-foot lanes and 2 to 4-foot shoulders along Highway 1 where practical and consistent with other coastal resource values. A program of constructing left-turn lanes and other improvements should be undertaken to improve traffic capacity and safety. (Section 4.1.3.A.1).
- A design theme should be developed for construction and appearance of improvements within the Highway 1 right-of-way in cooperation with State Parks, US Forest Service and local citizens. The design criteria should be applied to roadway signs, fences and railings, access area improvements, bridges, restrooms, trash receptacles, etc. The objective of such criteria shall be to ensure that all improvements are inconspicuous and are in harmony with the rustic natural setting of the Big Sur Coast. Use the document *Design Standards for the Big Sur Highway* as a basis and point of departure (Section 4.1.3.B.4).

The *Design Standards for the Big Sur Highway* (Big Sur Citizens Advisory Committee, 1980) referenced above illustrates the degree of interest and attention to detail from members of the community for how Highway 1 is managed. Prevailing themes are (1) preservation of the highway's rural, historic character; (2) mitigation for negative environmental impacts

associated with highway activities; and (3) promotion of environmentally sensitive approaches for future improvements. Specific subjects of that document include:

- Desirable pavement widths for travel lanes and shoulders
- Roadside vegetation management, habitat and landscape protection
- Parking and visual screening
- Restoration of key canyon crossings with embankment fill to bridges
- Functions of earthen berms
- Road cuts and natural landforms
- Use of natural materials in highway features
- Design, placement and control of signs
- Overhead utility lines
- Heights for light standards
- Roadside development
- Highway capacity, operations and vehicle speeds
- Design parameters for view pullouts
- Traveler amenities (e.g., restrooms, telephones, and trash receptacles).

The LUP also indicates that the *Design Standards for the Big Sur Highway* can serve as a point of departure for guiding future activities on Highway 1. These *Guidelines for Corridor Aesthetics* are intended in large part to fulfill this longstanding desire.

San Luis Obispo County Local Coastal Program

The southern three miles of the study area, referred to as the Ragged Point section or the Big Sur Gateway, are within San Luis Obispo County where the policies of its certified Local Coastal Program would apply. Coastal Plan policies relevant to these guidelines are summarized as follows:

- **Protection of Visual and Scenic Resources:** Unique and attractive features of the landscape, including but not limited to unusual landforms, scenic vistas and sensitive habitats are to be preserved, protected and, in visually degraded areas restored where feasible. (Policy 1)

- **Landform Alterations:** Grading, earthmoving, major vegetation removal and other landform alterations within public view corridors are to be minimized. Where feasible, contours of the finished surface must blend with adjacent natural terrain to achieve a consistent grade and natural appearance. (Policy 5)

- **Preservation of Trees and Native Vegetation:** New development shall minimize the need for tree removal. Trees that must be removed to accommodate development or to address a safety issue must be replanted with similar species or species that reflects community character. (Policy 7)

- **Utility Lines within View Corridors:** Where feasible, utility lines within public view corridors should be placed underground whenever their

aboveground placement would inhibit or detract from ocean views. In all other cases, where feasible, they shall be placed in a manner as to minimize their visibility from the road. (Policy 8)

- **Signs:** Prohibit off-premise commercial signs except for seasonal, temporary agricultural signs. Information and direction signs shall be designed to be simple, east-to-read and harmonize with surrounding elements. (Policy 9)

The Ragged Point area is located within the North Coast Area Plan of the San Luis Obispo Local Coastal Plan (LCP). This element of the LCP is undergoing an update process and is subject to further revision. The January 2000 Project Description of the North Coast Area Plan, although adopted by the County Board of Supervisors, has not been certified by the California Coastal Commission and is therefore does not have the weight of regulation. However, for purposes of these guidelines, aspects from the January 2000 update related to Highway 1 are summarized below as insight to the locally held values:

- **Circulation:** As required by statute (California Coastal Act) Highway 1 will remain a two-lane scenic road in rural areas of the Coastal Zone. In order to maintain the scenic quality…only minor safety improvements are proposed such as signalization, channelization, limited passing lanes and minor realignments.

- **Scenic Highway Enhancement:** The county and the state (Caltrans) should work together to develop an enhancement plan and funding sources to enhance the scenic qualities of the Highway 1 corridor. Examples of enhancement include undergrounding of utilities, purchase of existing billboard signs, revegetation and tree planting, and screening of unsightly features such as quarry sites or buildings.

San Luis Obispo North Coast Scenic Byway Enhancement Plan

A corridor management plan prepared by the San Luis Obispo Council of Governments outlines the desire for enhancing the aesthetics and public access features on Highway 1 from the San Luis Obispo city limits to the Monterey County line. This document largely responds to the LCP (above) to develop such a plan; this plan provides more specific suggestions for enhancements, such as removing billboards and improving conditions for non-motorized travel.

Streets & Highways Code Section 121

A commitment to context sensitive solutions at the state level acknowledging the national significance of the route is also supported by legislation. Assembly Bill 2440 (Keeley) was signed by Governor Davis in 2002 and added Section 121 to the Streets & Highways Code. The statute requires the Department to maintain and operate any state highway that was designated as an All-American Road on or before April 30, 2002 in a manner consistent with the recommendations for context-sensitive design standards relative aesthetics and safety contained in the corridor management plan submitted to the FHWA.

1.2 Applicability and Authority

These guidelines are intended to address aesthetics for the Highway 1 corridor along the Big Sur Coast, consistent with the route designations as both a State Scenic Highway and an All American Road under the National Scenic Byways Program. These guidelines support the Big Sur Coast Highway Management Plan (CHMP) which has been prepared consistent with guidelines for a Corridor Management Plan for an All-American Road under the National Scenic Byways Program.

The primary focus is on highway-related activities, namely construction, rehabilitation, repair and maintenance within the right-of-way and those conducted under the authority and responsibility of Caltrans. Features outside the highway right-of-way, and therefore outside Caltrans' authority, are addressed to highlight the need for a coordinated voluntary effort to achieve the desired aesthetic and to encourage visual compatibility throughout the corridor. There is no intent with these guidelines, either implied or explicit, to change existing lines of authority and responsibility for land use decisions or activities conducted on private or public property. The CHMP, including these guidelines, is not intended to be used as a regulatory document.

These guidelines are intended to express stakeholder values related to corridor visual qualities. This document will serve as a tool to explore and promote flexibility in highway design where appropriate, and to demonstrate the Department's commitment to solutions that are sensitive to the overall environmental and aesthetic context unique to this corridor.

The majority of features and elements described herein are generally those that are considered common, have a history of application or for which a need has been identified within the corridor. A few features addressed here might be considered new and still others are certain to arise in the future. As such, these guidelines do not intend to be all-inclusive or to promote or preclude any particular solution, rather they provide a tool to guide future decisions in a consistent manner. These guidelines also do not demand a specific program to upgrade or implement broad scale changes, rather the expectation is that actions will be taken and considerations made as part of a regular program of highway improvements.

Caltrans has the authority for all actions occurring within the state right-of-way. While most activities are initiated and undertaken by Caltrans, others may be authorized by permission. These guidelines are intended to address the full range of activities within the highway right-of-way. This document is complementary to existing manuals and procedures for safe highway design and to incorporate the decision-making principles of context sensitive solutions. These guidelines do not supersede any established manuals, procedures or planning documents. These guidelines also do not set policy, but rather integrate existing policies in a manner that can be interpreted to achieve the greatest compatibility.

An essential reference for highway design is the state's *Highway Design Manual* (HDM), which sets forth the current standards for ensuring essential safety of the traveling public. Standards are derived from ongoing technical research and documented patterns and trends; the HDM is regularly updated to reflect the latest findings. Deviations from standard designs are evaluated rigorously to ensure that granting a design exception would not compromise safety. The *Project Development Procedures Manual*, *Traffic Manual* and *Maintenance Manual* are other documents Caltrans relies upon for preserving the essentials of a safe highway.

Guiding features such as signs and pavement markings are called traffic control devices and the Federal Highway Administration's *Manual of Uniform Traffic Control Devices* establishes the applicable standards. Uniformity of these features is necessary to communicate messages with consistent visual cues nationwide.

The Americans with Disabilities Act (ADA) guides the design for accessible public rights-of-way and covers access to pedestrian walkways and streets, including sidewalks, crosswalks, curb ramps, street furnishings, parking, vista points and facilities, and other components of the right-of-way.

By building upon applicable standards from these other sources, the *Guidelines for Corridor Aesthetics* honor the overall safety and efficient operation of the highway for motorists, pedestrians and bicyclists, transit users and highway workers, while also providing practical guidance to ensure compatibility with other values. In specific instances, it will be important to explore the flexibility within applicable standards before determining whether an exception to a standard is appropriate. In some cases, a deviation from a standard should be considered and would be evaluated through an engineering analysis and documented with a Design Exception Fact Sheet for Non-Standard Features.

It is also important to note that over time, new policies and directions will be generated, some of which may have implications for how these guidelines are applied or interpreted. These guidelines are not meant to be exhaustive in terms of identifying all possible changes in the corridor; they are meant to help establish a pattern of giving careful consideration to new elements that may arise through policy, standard or new technology. Thorough evaluation of alternatives will always be necessary to determine the best approach to maintain the desired aesthetic within the corridor.

2.0 Understanding the Context

The fundamental task to keep Highway 1 open in spite of ongoing natural forces shaping the landscape is anything but trivial or routine. Through the years, actions associated with keeping the road safe and reliable have met with varying degrees of acceptance and criticism. Considering the rich environment and the unparalleled experience the coast offers, this challenge is heightened by the extra care required to preserve the highway's scenic integrity. As contemporary standards for highway safety have evolved, critics have been quick to suggest that a seemingly blind application of standard highway design elements is not suited to the unique and special qualities of the Big Sur Coast.

The CHMP planning process included extensive information gathering and documentation of corridor qualities and relied upon the active participation of diverse stakeholders. Intrinsic qualities that define the essence of the corridor have been documented in a series of technical reports.[9] These qualities include the scenic, historic, recreational, cultural and natural elements. The combination of these elements is unique to the corridor and helps define the values that the communities along the Big Sur Coast seek most to preserve. Important qualities not specifically documented or quantified but not to be understated are the pride of local, private land ownership and stewardship expressed throughout the corridor. From these come the derived value of individual expression and freedom, which is reflected in the visual character of the corridor.

Discussion forums were provided with a series of working groups that met during the CHMP planning process. A total of four such groups formed around the themes that emerged from the initial scoping process[10]. Having met on numerous occasions since September 2000, two of these groups touched on issues relevant to these guidelines. These two groups were the Scenic & Habitat Conservation Working Group and the Public Access & Recreation Working Group. The stakeholder participants represented various public agencies, community members and non-governmental organizations. The meetings provided opportunities to discuss specific conservation-related issues and to share information toward formulating a more unified approach.

The Scenic & Habitat Conservation Working Group met five times, conducted two field trips and participated in a two-day workshop between September 2000 and June 2001. This working group provided photo-documentation and input on the values and threats to the visual integrity of the highway corridor. Specific issues included signage, landscape screening, invasive weeds, utilities, guardrails and bridge rail, fences and lighting. The Public Access & Recreation Working Group met on two occasions and focused on seeking balance among strong stakeholder interests. Primary interests pertain to resource conservation, local lifestyles and property rights, and opportunities for public access and enjoyment of the corridor. Stakeholders' expressions of interest may be summarized as follows:

- The essential character of Highway 1 is that of a functional highway that passes through a unique and spectacular landscape.

[9] The series is a complete inventory of Corridor Intrinsic Qualities and includes a geographic information system database.
[10] The four groups are Storm Damage Response & Repair, Maintenance, Scenic & Habitat Conservation and Public Access & Recreation.

- The true historic character of the corridor is worthy of preservation. Leaving the corridor essentially as it is will better honor this character than converting it to a sanitized scenic highway experience or theme park.
- The highway is not homogeneous in character; it passes through a series of different environments each with distinct characteristics and individual themes.
- Uniformity of roadside features should be avoided, as it would conflict with recognizing the varied and distinct characteristics along the corridor.
- The needs of one stakeholder group should not be disproportionate to others. Accommodating needs of visitors should not outweigh the desires and needs of the local community for whom the highway is a central feature of daily life, and vice versa.
- For decades, the local community has accepted and encouraged a measure of eclecticism and expressions of individuality and craft in features such as mailboxes, private signs and small structures.
- Although diversity in roadside features is valued, increasing clutter is a serious concern. This is most evidenced in commentary regarding unnecessary, redundant or poorly designed signs and visually intrusive overhead utilities.

A common thread running through these individual expressions is conservation. Stakeholders largely value the corridor just as it is, rugged and rural. The landscape speaks for itself. Some stakeholders express great reservation over any set of guidelines that would create a theme for future design elements; introducing elements of self-consciousness or a sense of control to the corridor is undesirable. Highway 1 is accepted as an authentic response to the need for human access through a rugged yet fragile environment.

When stakeholders' various expressions are considered together, the importance of balance is also revealed. The goal of these guidelines for corridor aesthetics is to preserve the essential character of the corridor while balancing the needs of the multiple stakeholders. In furtherance of this goal, a set of guiding principles evolved from the two working groups that provide a policy context for these guidelines.

Guiding Principles for Scenic & Habitat Conservation
1. *Respect diversity, individuality, and character of place.* 2. *Minimize visibility of human activity.* 3. *Protect and restore native habitats and corridor natural, scenic and cultural resources.* 4. *Pursue multi-party solutions to achieve success.*

Guiding Principles for Public Access & Recreation

1. *Communicate essential traveler information.*
2. *Promote a network of motorized and non-motorized public access that balances recreational opportunities and the protection of sensitive resources, private properties, and community values.*
3. *Support the recreational value of traveling the Coast Highway.*
4. *Be guided by the capacity of the Big Sur Coast to educate and inspire.*

The corridor maps attached to this report also reflect the sense of place in which the community identifies itself. In early sessions of the Scenic & Habitat Conservation Working Group, the corridor was identified by a series of thirteen sections. These sections, outlined below in Table 1, were developed to characterize the corridor as defined by its geography[11].

Name	Boundary Features			
	Begin	P.M.	End	P.M.
Ragged Pt	San Carpoforo Creek	71.4	SLO/MON Co. line	0.0
Gorda Coast	SLO/MON Co. line	0.0	Willow Creek	11.6
Pacific Valley	Willow Creek	11.6	Wild Cattle Creek	17.3
Lucia Coast	Wild Cattle Creek	17.3	Lucia	23.0
Big Creek Coast	Lucia	23.0	Rat Creek	30.8
Esalen Coast	Rat Creek	30.8	JP Burns	35.8
Partington Coast	JP Burns	35.8	Castro Canyon	43.1
Big Sur Valley	Castro Canyon	43.1	Molera	51.2
El Sur Ranch	Molera	51.2	Little Sur River	56.1
Bixby Coast	Little Sur River	56.1	Rocky Creek	60.0
Garrapata Coast	Rocky Creek	60.0	Malpaso Creek	67.8
Carmel Highlands	Malpaso Creek	67.8	Point Lobos	70.4
Point Lobos	Point Lobos	70.4	Rio Road	72.6

Table 1: Corridor sections of Highway 1 along the Big Sur Coast.

[11] Features are also identified by postmile, abbreviated by P.M. Postmiles identify the location along the highway measured in miles and increase from south to north; postmiles begin at 0.0 at county boundaries.

3.0 Guidelines for the Corridor

These guidelines are organized from the highway outward; in other words, the most basic features of the highway itself are presented first followed by the features along the roadsides. This approach is based on the principle that the fundamental physical aspects of a highway as experienced by corridor residents and travelers are the primary determinants of the highway's cultural and aesthetic character.

3.1 Geometry

Roadway geometry is expressed as a combination of width and plan (horizontal alignment) and profile (vertical alignment). Geometry is the single most important factor that determines how a traveler experiences a roadway. Pavement appearance is the next most important factor and is described in the next section. Therefore, policies to preserve the essential elements of Highway 1's geometry along the Big Sur Coast will be the most effective way to maintain the highway's historic rural character and preserve the memorable scenic and driving experience the highway offers.

Width and plan and profile define the highway's relationship to topography: how the highway flows through the landscape and responds to varying natural features and constraints. Some highways have been carefully planned, designed and constructed as scenic highways. The Blue Ridge Parkway, a 469-mile road that connects Shenandoah and Great Smoky Mountains National Parks in Virginia and North Carolina, is an example of such an undertaking. The flow of the Blue Ridge Parkway through the Appalachian Mountain chain was carefully designed to provide a memorable driving experience through striking scenery and to offer a close-up look at the natural and cultural history of the mountains. By contrast, the construction of Highway 1 did not enjoy the same level of planning and design. Although the visionaries for this coastal route were motivated by the opportunities for unparalleled views, there was no formal design process that preceded its construction. Highway 1 is a working highway that happens to traverse one of the most spectacular landscapes in the world. Its practical geometry treads lightly through an extreme landscape that is as fragile as it is dramatic, and this interaction of road and nature has created one of the world's premier travel adventures.

Visual Roadway Width

A relatively consistent visual roadway width (combined width of roadbed, vegetation control areas) is the first of the two key factors in defining the highway's distinctive character.

1. The overall effect of the visual roadway width should be to support the essential character of the Big Sur section of Highway 1 as a rural, 2-lane scenic highway.

2. Overall visual width should be as consistent as possible along the entire corridor while accounting for deviations as necessitated by site-specific operational improvements, such as turnouts and left-turn lanes.

3. Travel lane and paved shoulder widths should be as consistent as possible along the entire corridor.

4. To reinforce consistent visual widths, the boundaries between paved and unpaved surfaces should be smoothly aligned and crisply defined.

Plan and Profile

Plan and profile, or horizontal and vertical alignment, is the second key factor that defines the highway's distinctive character. For a new road, the main controlling factors of plan and profile are design speed and safety. For Highway 1, maintaining existing design speeds (i.e., not increasing existing speed limits) is important for avoiding major modifications to the existing plan and profile. Maintaining this profile is important to retain the highway's relationship to the land and the experience of traveling the highway.

1. The existing plan and profile creates a consistent scenic highway and driving experience for the traveler. The plan and profile should be retained unless overriding safety considerations requires a specific change.

2. Where alterations of the plan and profile are necessary for managing safe vehicle speeds or to address a specific safety consideration, sections with new plan and profile should be carefully fitted and blended with existing sections to maintain a traveler experience similar to the existing plan and profile.

3. Plan and profile for complete sections of highway requiring reconstruction should remain as consistent as possible with the previous plan and profile condition.

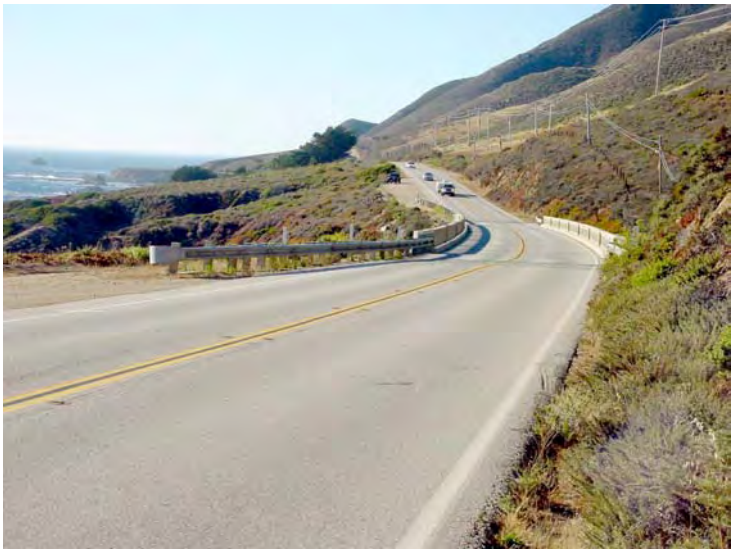

Figure 3: Highway 1 between Big Sur Valley and Carmel (Attachment 1a). The highway's character is largely defined by a consistent attitude toward visual roadway width and alignment (plan and profile).

Figure 4: Highway 1 on the southern section of the Big Sur Coast. In contrast to the Big Sur Valley area (see Figure 3), this section features a tighter plan and profile which requires slower travel speeds.

3.2 Roadway Elements

Guidelines in this section apply primarily to visual factors that work with basic geometry to define and maintain the sense of integrity, quality, history, and continuity that characterize the scenic highway experience.

Pavements

After geometry, described above, pavement appearance is the next most important feature that defines the highway's basic character.

1. Paved surfaces should retain relative continuity of pavement color (i.e., dark gray/black asphalt concrete). Any new materials used for paving should match the existing pavement for basic color and reflectivity to the extent practical.

2. Application of consistently smooth striping of the centerline and fog-line help provide the experience of flow along the highway.

3. Bridge deck resurfacing should preserve the visual character of the existing deck. For example, for a concrete bridge deck, resurfacing material should be colored or otherwise visually match the existing concrete surface to the degree possible.

4. The width of concrete bridge approach slabs should match roadway pavement width to ensure a smooth visual transition.

Travel Lanes & Shoulders

The travel lane is the distance between the yellow centerline and the white fog line at the outer edge of the traveled way; the shoulder is the area beyond the white fog line and may be paved or unpaved. Shoulders provide three basic functions: (1) refuge for vehicles to stop in the case of emergency; (2) lateral support for the roadway itself; (3) support for shared use of the highway for non-motorized travelers. Consistent lane and shoulder widths are important for safe travel conditions as well as for their contribution to a desired aesthetic.

For conventional 2-lane highways such as Highway 1, the *Highway Design Manual* establishes the statewide standard for new construction as12-foot travel lanes and 8-foot paved shoulders[12]. However, for roadway improvements developed under *resurfacing, restoration, and rehabilitation* (also known as *3R*) geometric standards for paved shoulder widths may vary from 0 to 8 feet depending on traffic volumes and the width of existing shoulders beyond a 12-foot travel lane. Under 3R standards, the relatively modest traffic volumes on the Big Sur Coast section of Route 1[13] would typically allow consideration of 12-foot lanes and 4-foot paved shoulders.

Caltrans documents the long-term vision for each state highway with a *Transportation Concept Report* (TCR). These route-specific documents are prepared by geographic region corresponding to each of Caltrans' 12 Districts[14]. The TCR fills three primary needs in transportation planning: (1) evaluate current and projected conditions along the route; (2) establish a twenty-year planning vision or concept; and (3) recommend long-term improvements to achieve the concept. With regard to physical dimensions for the Big Sur Coast portion of the corridor, the TCR calls for a 32-foot minimum roadbed with two 12-foot travel lanes and 4-foot paved shoulders[15]. (See Figure 5.)

Actual travel lane widths vary along the Big Sur Coast. With the exceptions found along the most precipitous stretches, where lanes can be as narrow as 9 feet, travel lanes are 10-12 feet. Standard 12-foot wide travel lanes are sought with highway improvements whenever possible.

The width of paved shoulders in the corridor is more variable, ranging from 0 to 8 feet. Acknowledging the practical difficulty and potential effects of achieving the 8-foot standard on the Big Sur Coast, the TCR concept calls for minimum 4-foot paved shoulders. Shoulders of this width have been allowed by design exception under specific circumstances. In many areas where paved shoulders remain narrower than this, even obtaining a 4-foot shoulder would be a difficult proposition.

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[12] Caltrans uses the metric system for all highway geometric design standards. Planning documents, such as these guidelines, often rely on the more familiar imperial or English units. See Appendix 1 for the unit conversions.

[13] See Appendix 2 for Highway 1 traffic volumes in Monterey County and the neighboring coastal counties.

[14] Monterey and San Luis Obispo counties are within Caltrans District 5, which extends south to include Santa Barbara county, north to Santa Cruz county and east to San Benito county.

[15] Originally referred to as a Route Concept Report, the existing document was prepared in 1986 and updated in 1990. Now referred to as a TCR, the document for each route considers transit, rail and non-motorized alternatives for accommodating travel demand more fully. District 5 is currently updating the TCR for Route 1.

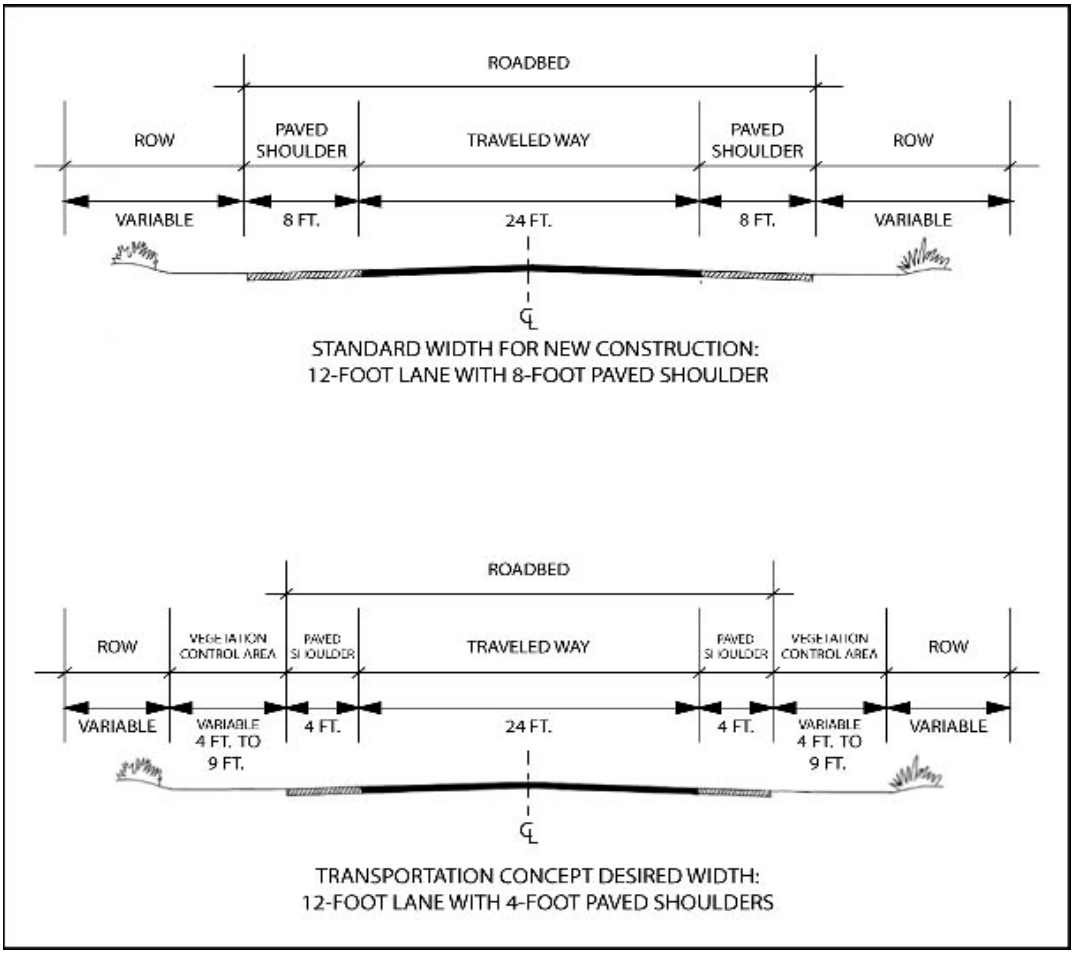

Figure 5: Comparison of typical cross sections on a standard width for new construction on a rural two-lane highway and the Transportation Concept desired width for Highway 1. The main difference is the width of the paved shoulder (8 feet vs. 4 feet); the desired width also accommodates roadside features for the unpaved shoulder within the vegetation control area.

The importance of paved shoulders as proven components for basic highway safety cannot be understated. Paved shoulders support safe shared use of the highway by motorists, pedestrians and bicyclists. Over the years, sections of shoulder (both paved and unpaved) have been widened in many places along the corridor, typically where significant cutting or filling was not required. A broad scale widening effort to provide paved shoulders throughout the corridor would fundamentally alter the highway's visual character. Paved shoulders are included as part of specific highway reconstruction efforts (such as a repair necessitated by land sliding), at specific sites where needed for safety considerations, and need to be part of a future integrated strategy to enhance conditions for the non-motorized traveler.

A transition to the unpaved portion of the shoulder is also important. Safe roadsides include a smooth transition from the paved to the unpaved surface. There is no standard width for an unpaved shoulder, however, a 4-foot unpaved shoulder provides for general

roadside safety and visual continuity. Maintenance of the unpaved shoulder known as "shoulder backing" refers to supplementing and blading the immediate roadside with soil and gravel to support the paved shoulder and provide for a smooth transition.

These guidelines support the concept for a 32-foot roadbed with 12-foot travel lanes and 4-foot paved shoulders and the imperative to consider deviations on a case-by-case basis. Individual situations must carefully evaluate the potential for environmental impacts of any widening and the appropriateness of a design exception to the 8-foot standard for shoulder width.

The following guidelines for travel lanes and shoulders are suggested to achieve and maintain the desired aesthetic in the corridor:

1. Support the concept for consistent 12-foot travel lanes and 4-foot paved shoulders, consistent with the *Transportation Concept Report* (TCR) for the Big Sur Coast portion of Highway 1, and strive for continuity in paved shoulder widths, to the extent practicable. In supporting this concept, acknowledge the need for case-by-case review for safety and environmental impacts and require approval of a design exception to allow a combined roadbed width of less than 40 feet.

2. Where conditions reasonably permit, provide a paved shoulder to enhance conditions for non-motorized travelers. This provides a measure of comfort for shared use of the highway.

3. Where conditions reasonably permit, maintain a consistent width for vegetation control (including unpaved shoulders). In addition to the aesthetic benefits, vegetation control is essential for roadside safety; roadsides providing a smooth transition from the pavement and free of obstacles minimize the consequences of any errant maneuvers off the traveled way. The overall width of paved shoulder and vegetation control area including unpaved shoulder may be 8 to 13 feet. Beyond an unpaved shoulder, which should remain free of any vegetation, the vegetation control area[16] may include grasses and shrubs compatible with adjacent natural habitats.

4. For roadsides where frequent short-duration stopping is already established (such as pullouts with high use, described below), supplemental surface treatments may be desired to provide added stability to prevent vertical drop-offs from the paved to the unpaved surface. The use of a safe and effective stabilizer, such as a spray-on emulsion, is encouraged over asphalt paving since it adds stability and hardness to the surface while maintaining a gravel appearance.

5. Material for shoulder backing necessary to maintain a smooth transition from the paved to the unpaved surface at the edge of pavement should be visually compatible with the site. Imported materials should be selected to match the site to the extent possible.

[16] More detailed information on roadside practices related to vegetation control is available in the Vegetation Management Guidelines for the corridor.

Turnouts

A turnout is an operational feature of the highway consisting of a paved or unpaved area beyond the highway shoulder where slower moving vehicles can safely move completely off the traveled way and allow following vehicles to pass. Paved turnouts are designated with signs and, in order to support their essential function, do not allow parking.

Figure 6: A typical turnout along Highway 1. Used by slower-moving vehicles, this turnout is paved, tapered at both ends, and marked by a sign.

1. Turnouts must be of sufficient width to allow a vehicle to clear the travel lane.

2. Transition sections (tapers) at each end of a turnout should be visually smooth and continuous, not abrupt or disjointed.

Vista Points

A vista point is a formally designated (and signed) paved area beyond the highway shoulder that provides a visitor-serving amenity along the highway. Similar function is provided by pullouts, which are not formalized (see description below). Vista points and pullouts both allow travelers a place to pull safely off the road and stop to take in a characteristic view of the landscape. The vista point designation denotes a level of permanence (or at least longevity) along the route affording it regular maintenance corresponding to the level of use. Vista points provide for short-term parking and may include other amenities such as walkways, interpretive displays, drinking water and restrooms.

Three locations along the Big Sur Coast are designated as vista points (near Abalone Cove, north of Julia Pfeiffer Burns State Park and south of Big Creek, see Attachment 1, Maps a-c). Each of these vista points provides parking and, except for a remnant of an interpretive display at one location, no other amenities.

The ideal design of a vista point screens off-road parking from the roadway and provides distinct entrance and exit points. Separation of parking from the roadway promotes safety by controlling access. In visual terms, separation creates a more attractive and orderly roadside environment.

1. Parking areas at vista points should be physically and visually separated from the roadway except at points of access. Depending on site conditions and safety considerations, the element providing separation may take the form of an unpaved or textured surface or a low-height feature such as an island, swale, decorative wall, landscaped berm, or natural topographic features.

2. Separation features must be forgiving to inadvertent or errant maneuvers off the highway and be designed to maintain adequate visibility (sight lines and sight distances) at highway entrance and exit points.

3. To limit the amount of asphalt paving for parking, use of surface stabilizers that maintain a natural gravel appearance should be considered. For paved parking areas, pavement should visually match the roadway to the extent practicable. All parking areas should include features to keep vehicles within designated areas.

Figure 7: North of Julia Pfeiffer-Burns State Park is one of three designated vista points along the Big Sur Coast (Attachment 1b). This site includes contemporary masonry features designed for interpretive panels; these masonry features were not part of the original highway construction.

4. Geometric design at highway entrance and exit points should be visually smooth and continuous, not abrupt or disjointed. Entrance and exit aprons should be as narrow as applicable standards allow and should be paved.

5. Consideration of any new features or amenities at vista points will depend on location, use and site-specific conditions. Consideration for adding any special amenities, such as interpretive displays, restrooms or trash receptacles are subject to further discussion that fully involves stakeholders in the decision-making and partnerships in implementation. Any features would require careful design and choice of materials for visual

compatibility. Given that, any vista point improvements should include the following design elements:

- Clearly marked delineation between vehicle and pedestrian zones
- Surface treatments on paths and viewing areas to withstand expected use and prevent environmental degradation (e.g., impacts to vegetation, erosion). Surfaces may be hard or soft, in compliance with Americans with Disabilities Act (ADA) requirements.
- Architecturally designed barriers (e.g., stone walls, rail fences) to keep visitors a safe distance from the edges of cliffs or steep slopes.
- Accessibility features for compliance with the ADA.

Figure 8: A vista point south of Big Creek illustrates the use of a low vegetated island that separates the parking area and maintains the highway's visual continuity (Attachment 1b).

Pullouts

Pullouts are non-designated paved or unpaved areas beyond the shoulder that can serve as slow-vehicle turnouts or allow for parking near scenic views or trailheads[17]. Unlike designated turnouts or vista points, pullouts may be transitory in nature and subject to change. Pullouts are widely valued in this corridor as they allow for impromptu stopping in quiet areas that are small, less populated and unencumbered, in contrast to what might be expected at designated vista points. The essence of the many small pullouts is the opportunity for self-guided and more personal discovery of the coast and

[17] There is no formal definition of pullouts as a distinct roadside feature and they are not acknowledged in the *Highway Design Manual*; however, given their utility and value in this corridor, a definition is provided for the purposes of these guidelines.

might be considered lower impact relative to vista points. Pullouts have generally developed simply as travel-worn areas where a view was evident from the road, and where no sign has ever been needed to draw the traveler to stop. A preference for the informal over the formal is a strongly held value in the corridor and elevates the importance of these roadside features.

1. With respect to the value and opportunities provided by these less formal areas, retain and maintain existing pullouts to the maximum extent practicable.

2. Any changes or modifications to existing pullouts should be driven by safety or operational needs; options for permanence (e.g., designating vista points) should be evaluated. Modifications to existing pullouts or establishment of any new pullouts must consider the compatibility with adjacent land uses and intensity of existing use.

Parking

Short-term parking opportunities along Highway 1 are abundant. The ability for people to stop along their trip to enjoy the views or take a short hike on a designated trail is an important feature of coastal access that the highway provides. Parking is permitted wherever vehicles can safely pull off the highway and park clear of the traffic lane and shoulder, where it exists. Along the Big Sur Coast, parking is common at informal pullouts and vista points (as described in the sections above). Prohibitions on parking are reserved for locations where safety is compromised and valid concerns are documented, or where required by local ordinance. Nonetheless, the incidence of roadside parking sometimes raises concerns about visual quality (e.g., rows of parked cars) and challenges for managing access to neighboring private or public properties.

1. Where roadside parking is undesirable due to concerns for managing access to neighboring properties or for aesthetics, the potential for use of suitable physical barriers should be considered. Such barriers must not block views from the highway nor result in the placement of fixed objects in the vehicle recovery zone or where the barrier would preclude emergency parking that would compromise safety. Any barrier must be compatible with the local landscape, such as shallow earthen berms with low growing native plants (overall height less than 36"). Regulatory solutions (e.g., posting "No Parking" signs) are inappropriate unless safety concerns are evident.

2. Any new off-highway parking areas must be sited and designed in a manner so as to avoid adverse visual impacts from the highway (i.e., other than a clearly marked entry point, the parking area should not be visible from the highway) for consistency with the critical viewshed policy of Monterey County.

Highway Connections

This section applies to all types of connections to Highway 1 including public roads, private roads and driveways. As a rule, intersections interrupt the visual flow of a scenic highway. The intent of these guidelines is to make highway connections as simple and unobtrusive as possible in keeping with necessary safety and environmental conditions.

1. Avoid construction of new intersections with Highway 1 unless no reasonable alternative is available.

2. Landscape and topographic features around intersections should be cleared or modified only to the degree necessary to ensure adequate visibility (sight line and sight distance). Such modifications should be carefully designed and maintained to blend with natural background conditions.

3. Intersections should not include barrier elements such as curbs, raised medians, or guardrails except where positive control of vehicles is necessary for safety. Any such barrier should be compatible with the visual context.

4. Where left-turn channelization is provided, the overall roadway should be widened without sacrificing the continuity of the paved shoulders and vegetation control areas, to the extent reasonable (see Shoulders above).

5. At intersections with unpaved roads (public or private), approach aprons should be as narrow as applicable standards allow and paved to minimize accumulation of gravel on the highway.

6. Geometric transitions at intersections should be visually smooth and continuous, not abrupt or disjointed.

3.3 New Construction and Rehabilitation

A common theme for these guidelines is to conserve the historic, rural character of the corridor (see Section 3.4). It becomes especially important for design of new construction to be visually compatible with its setting by incorporating natural-appearing materials, to the extent possible, and by striving for design excellence that is emblematic of the corridor.

New highway construction here will generally be limited to that which responds to fundamental highway safety and operations, landslide management, storm damage, major maintenance and rehabilitation[18]. New construction could also include new visitor amenities such as vista points (See Section 3.2, Roadway Elements, above). The purpose of these guidelines is to ensure that new construction, where it occurs, is in keeping with the unique character and setting of the corridor.

Examples of new construction or rehabilitation include:

- Replacement or construction of a structure such as a bridge or side-hill viaduct.
- Roadway realignment, usually involving cut and fill earthwork, but may include tunneling.
- Construction of rockfall protection features, such as a rock shed, rock net or drapery.
- Rehabilitation of an existing bridge or other drainage structure or facility.
- Site restoration earthwork related to visual impact mitigation, habitat restoration, erosion control, or storm water quality.

[18] More information about these activities in the corridor is described in the *Guidelines for Landslide Management & Storm Damage Repair*.

New Bridges

Any new bridge along this coast must complement the architecturally significant historic bridges in the corridor. These bridges are internationally recognized for their architectural style and engineering excellence and for the continuity established by the use of a common design theme: the concrete arch spandrel. The character of these bridges is a major contributor to the historic character of the highway corridor. The intent of these guidelines is to ensure that new bridges complement this character by balancing respect for historic design themes with the best of contemporary structural expression.

1. New bridges should be authentic in design, rather than emulate something they are not, i.e., historic bridges. At the same time, structural designers should recognize historic bridges for the quality of aesthetic and engineering excellence they represent and strive to match or exceed this quality in contemporary terms.

2. In the interests of overall visual continuity, designers should first consider bridge types that are in the same visual family as the historic bridges: arched or arch-like main span structures below deck level and the use of concrete.

3. In designing the alignment of a new bridge, designers should allow the roadway's geometry (plan and profile) to flow smoothly over the bridge, not necessarily limiting the alignment to a tangent (or straight) geometry.

   Note: Part of the appeal of Bixby Creek Bridge, the most photographed of the historic bridges, is that the spans at each end are curved for a smooth transition between the curved roadway approaches and the tangent center span. That is to say, the plan view shows horizontal curves at the ends of the bridges, connected by a straight section in the middle.

4. To maintain the visual continuity of the existing roadway, the width of new bridges should match the width of approaching roadways, including shoulders, as closely as possible. As with roadway shoulder widths, the desired aesthetic for structures would support the concept for a 32-foot roadbed, subject to site-specific considerations and with consideration for appropriate exceptions from the 40-foot standard.

5. New bridges must include an appropriate rail for safety of motorists, cyclists and pedestrians; the rail type should be visually compatible with the open concrete balustrade rail seen on historic bridges. (See Section 3.4)

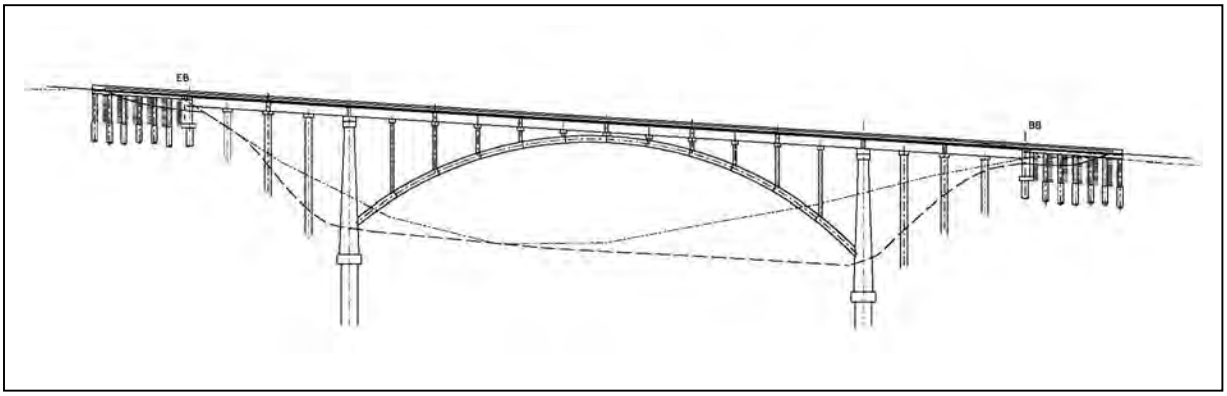

Figure 9: A conceptual design option for a new bridge that features a concrete arch main span, recalling the theme of the historic bridges along Highway 1.

Historic Bridges

The concrete arch bridges along Highway 1 are important features of the Carmel-San Simeon Highway Historic District and have been found eligible for listing in the National Register of Historic Places. These bridges, individually and as a cohesive group, are recognized internationally for their aesthetic qualities and engineering design excellence. However, the structures, now over 60 years old, require ongoing maintenance, repairs, and occasional major upgrades.

1. Should any structural modification be identified as a critical need (such as the seismic retrofit program in the 1990s), the visual design of historic bridges should be changed as little as possible. Necessary modifications should be designed visually as if these features had been incorporated in the bridges as originally constructed. [19]

   Note: The seismic retrofit of Bixby Creek bridge completed in the year 2000 exemplifies the value of this guideline and stands as a model for future modifications to Highway 1's historic bridges. The upgrade, which involved retrofitting the bridge deck as a continuous horizontal diaphragm, seamlessly blends the new and the old to leave the aesthetic integrity of the bridge intact.

2. Bridge rails on historic bridges should be repaired or reconstructed to replicate the original rails as closely as possible.

[19] The National Register eligibility of these structures requires that any modifications be consistent with the Secretary of Interior's *Standards for the Treatment of Historic Properties*.

Figure 10: The internationally famous Bixby Creek Bridge in 2002. A close-up of the open balustrade bridge rail (right photo) is characteristic of the historic bridges along the Big Sur Coast.

Side-hill Structures & Retaining Systems

Due to the extreme terrain and characteristic land sliding in the corridor, side-hill structures and retaining systems are many and varied[20]. Visible structural solutions may include retaining walls (of a variety of materials such as rock masonry, concrete and timber lagging), crib walls, side-hill viaducts, rock armoring and gabions. These elements are relatively common throughout the corridor; additional features may be introduced as new construction. Such structures and elements are subject to repair, modification, or replacement over time. The oldest retaining systems date back to the original construction of the highway and are part of the Carmel-San Simeon Highway Historic District. Constructed of rock masonry over 70 years ago, many of the original retaining walls are still in place (see Section 3.4).

1. Maintenance, repair and rehabilitation of the historic rock masonry features must retain the integrity of the features; work must be conducted consistent with the Secretary of Interior's standards to comply with the National Historic Preservation Act and may require consultation with the State Historic Preservation Officer.[21] In addition to ensuring structural reliability and function, the primary objective would be to retain the appearance and integrity of the original stonework.

2. Newly constructed retaining walls, guardrails, side-hill structures, or any other highway safety features should be designed for visual compatibility with the rural character; use

[20] The *Guidelines for Landslide Management & Storm Damage Response* for the CHMP provide insight into the various engineering solutions available for dealing with instabilities.
[21] A comprehensive approach for management of these features in compliance with Section 106 of the National Historic Preservation Act is also under development as of the date of these guidelines.

of natural-appearing materials, such as stone and timber, should be considered where appropriate to the local setting.

3. New structures should be non-replicative. In keeping with the Secretary of Interior's preservation principles, new retaining walls, parapet walls, or culvert headwalls should be visually distinguishable from those that comprise the Historic District.

4. New retaining walls visible from the highway or other public viewing areas should be designed and constructed for visual compatibility with the rural character. Use of natural-appearing materials, such as stone and timber, will be preferred when appropriate to the local setting.

5. Evaluate visible side-hill structures that appear incompatible with the setting and consider the potential for application of aesthetic treatments for blending better into the landscape.

6. Design considerations for major new structures should be the same as those for bridges (see New Bridges, above).

Figure 11: The Forest Boundary side-hill viaduct completed in 2001. Built to pass over an area of slope instability, the viaduct is typical of major new structures that must be integrated with the historic fabric of Highway 1.

Fills and Cuts

Highway 1 passes through extreme topography along most of its route between San Simeon and Carmel and major cuts and fills are prominent visual features along all coastal sections of the corridor. For the traveler, cuts along the highway are most visible as they may be viewed up close and at a distance; fills, since they are below the highway, may only be visible from a distance.

A variety of actions can result in modifications to existing cut and fill slopes and sometimes construction of new slopes. Both minor and major earthwork may be associated with any alterations to the highway plan and profile; the most common would be realignments or other repairs related to landslide and site restoration activities. Even minor slope modifications can create noticeable visual changes, such as opening up lines of sight and vistas.

In general, modifications to cuts and fills should be consistent with the following principles:

- Slope steepness should generally be as consistent as possible with neighboring slopes. The objective to minimize cuts and thereby excess material also supports the objective to reduce the scale of any remnant visual scar.
- Slope cuts into rock units should resemble the natural rock faces or outcroppings as much as possible through appropriate excavation and blasting techniques.
- Cuts and fills should be finished to blend in with natural terrain through techniques such as slope steepening or rounding (as appropriate), slope roughening and native revegetation.

Figure 12: A road cut along Highway 1 on the Garrapata Coast. Steep cut slopes, typical of early highway construction, can be stable even with visible rills from erosion. Constructing flatter slopes (or "laying back" the slope) would alter the visual context and require a larger area of disturbance. (See also Section 3.6 regarding the prominence of overhead utility lines evident in this view.)

Drainage Facilities

Drainage facilities include culverts, down drains or overside drains,[22] and other appurtenances at inlets and outlets to drain water and debris around the facilities[23].

[22] A down drain or overside drain refers to a pipe that carries water down a slope across the surface, as opposed to buried under fill as by a culvert.

Features such as headwalls, debris protection devices, and energy dissipaters facilitate smooth flow and protect against erosion. Under most circumstances, headwalls are not visible from the highway; overside drains and devices for debris protection and energy dissipation have a greater potential to be visible.

Due to their proximity to the road, drainage facilities must also be sited and designed for traveler safety. Features such as headwalls and debris protection devices near the road should not be roadside obstacles and should be traversable. Careful consideration must also be given to visibility of the features from the highway, both near and distant views such as around a curve or across a canyon.

1. Debris protection devices should be selected for type, materials, and installation to avoid or minimize their visibility from the road as much as possible; for any elements remaining visible, features should be designed or treated to be as visually compatible as possible. Depending on the type of feature, techniques for reducing visibility include profile height and material selection.

   - Overall height and profile visible from the highway must be limited to the minimum necessary to achieve essential function.

   - Non-reflective and natural-appearing materials appropriate to the site are preferred whenever practicable. Use of galvanized corrugated metal pipe (highly reflective with a shiny appearance) should be avoided when visible from the highway and used only when less visible alternatives or materials are not practical. This material should then be treated, i.e., painted or etched to minimize reflectivity such as painting or etching.

Figure 13: Debris protection measures at culvert inlets along Highway 1. The metal riser (left) has been painted to soften the appearance of galvanized metal; the timber used for the "bear trap" inlet (right) gives it a more rustic character. These photos also illustrate the importance of safety considerations with features in close proximity to the traveled way. At left, an orange reflective marker which is relatively light in mass warns drivers of an object close to the road; by contrast, the more massive bear trap is located further from the road where it could not be a roadside obstacle. (Right photo: Caltrans)

[23] The types, functions and locations of various drainage facilities found in the Big Sur Corridor are described in *Culvert Inventory for the Coast Highway Management Plan*.

2. Selection of energy dissipation devices should be evaluated for visual compatibility of material and type. For example, where imported rock is used, color and reflectivity of the material should be visually compatible with the surrounding slopes. Rock types should be selected to match reflectivity of the material type at the site or treated (e.g., stained) for visual compatibility.

3. In cases where headwalls, inlet/outlet features, overside drains or down drains are visible from the highway, the selection of type and materials must be visually compatibility to the highest degree reasonable. Visible galvanized metal elements (highly reflective giving a shiny appearance) should be avoided by choosing alternative materials or treating to reduce reflectivity.

4. Original rock masonry should be preserved and maintained, and restored or reconstructed when necessary in accordance with the Secretary of Interior's Standards[24].

5. In keeping with the Secretary of Interior's preservation principles for the Historic District, new masonry headwalls should be visually distinguishable from those that comprise the Historic District.

Figure 14: The masonry on this newly constructed headwall is an example of design excellence that honors the overall aesthetic of the historic character and is distinguishable from the stone rubble masonry associated with the original highway construction. (Photo: Caltrans)

6. Drainage swales and ditches visible from the highway (generally along the shoulder) should be treated to visually blend with the context. For example, where material for rock lining along a roadside ditch is imported (i.e., on-site material not available), it should be selected for similar color and reflectivity or treated where practical (e.g., stained) for visual compatibility.

Roadway Protection Systems

Dealing with landslides and rockfall has been a way of life along the Big Sur Coast throughout the history of Highway 1. The uneasy balance of engineering and nature where highway and landslides intersect is a fundamental aspect of the corridor's overall character. What occurs at landslide and rockfall sites is a natural consequence of conditions in a constant state of change, part of the day-to-day adventure of maintaining access under extreme conditions.

While there is an obligation to find solutions that are visually compatible with the setting, there is a corresponding need for acceptance of visual changes that are necessitated by actions needed to keep the highway open and safe. The scenic qualities here demand creative solutions that can avoid and minimize overall impacts.[25] The evolution in available technology has also responded to the needs for sensitive solutions.

Techniques for protecting and managing instabilities are addressed in more detail in the *Guidelines for Landslide Management and Storm Damage Response*. However, an example of achieving aesthetic benefits with the evolution of technology is most evident in the area of rockfall mitigation. Examples of traditional stabilization techniques on a rockfall slope include excavating (removing) the slope and laying it back and covering the slope with impervious material (such as shotcrete). Traditional protection measures often relied on rigid barriers, such as walls to protect highway travelers. With changes in technology, flexible barrier systems have evolved to become superior both in performance and in appearance. Flexible barriers made of cable or wire mesh netting can be colored to match or recede into the natural background. These newer protective barriers are generally less massive and less intrusive on the landscape than traditional solutions. However, even flexible barriers cannot be completely transparent.

1. Generally, mitigation to reduce the visibility of physical features associated with managing landslides should be weighed carefully. While it is important to demonstrate that efforts are made to minimize intrusion on the natural landscape (e.g., visually compatible colored vinyl-coating on galvanized metallic features), there should also be acceptance of what it takes to keep the highway and nature in balance. The value and use of the features and systems may also be highlighted as an item of interest (see Section 3.6 Roadside Interpretation and Traveler Amenities).

2. In assessing alternative strategies for managing landslide and rockfall sites, relative visual impacts should be reasonably considered as part of the assessment. The ideal condition is that the visual impact or changerequired to manage a site will be subsumed within (or subordinate to) the natural visual changes of the site.

3. Preference for type and material selection on protective systems (e.g., rockfall protection) will be given to those that are visually subordinate to the landscape, to the extent possible. Field installation details and the industrial design of system components will also emphasize visual compatibility (as above). For larger protective structures, such

[25] Design and management techniques developed by Caltrans and implemented on the Big Sur Coast are in fact on the cutting edge within the industry and are studied by engineers and geologists worldwide. The 53rd Annual Highway Geology Symposium held in San Luis Obispo in 2002 took participants on a tour of the southern Big Sur Coast.

as rock sheds, recommendations on aesthetic design for bridges should feature aesthetic and engineering design excellence).

Figure 15: A rocknet installation at Cow Cliffs prevents falling debris from reaching the road. Accumulated rock debris is periodically removed as part of maintaining the system. The raw nature of these sites, and the ingenuity required to keep the road open, is also part of the living character of Highway 1 along the Big Sur Coast.

Passing Lanes

Typical widening to construct passing lanes would involve an additional lane in one or both directions along a discrete stretch of highway. Although no such widening has been identified as a specific need for Highway 1 along the Big Sur Coast, the following guidance is offered in the event that a future need is identified.

1. Widening for passing lanes should only be considered after maximizing the opportunities to improve operations with smaller-scale remedies, such as turnouts.
2. Where a passing lane is considered, the overall roadway should be widened to accommodate the extra travel lane without sacrificing paved shoulders (see Section 3.2 Lane & Shoulder Widths).
3. The transition sections (tapers) at each end of the passing lane section should be visually smooth and continuous, not abrupt or disjointed.

3.4 Guardrail, Bridge Rail, Rock Walls and Fences

Roadside safety devices, such as guardrails and bridge rails, are common features along the corridor. The existing rock masonry features, although not considered safety devices, are important reminders of the original construction of the Carmel to San Simeon Highway Historic District and are important contributors to the historic and visual character of the corridor.

Among the most recognizable of the more than 300 individual rock masonry features that comprise the Historic District are the parapet walls. These parapet walls are impressive and memorable they are highly visible at the immediate outboard (west) side of the highway. The retaining walls and culvert headwalls as a group are less visible, with a few notable exceptions. Four drinking fountains, also outstanding examples of rock masonry within the Historic District, are visible from the highway but are not as readily seen as they are tucked in on the inland side of the highway.

One stretch of highway within the corridor contains a disproportionately high concentration of outstanding rubble masonry resources. Within the corridor segment known as the Partington Coast, the stretch from about one mile south of Partington Ridge Road to Grimes Canyon (MON-1-P.M. 37.5 to 42.0) possesses high scenic values that most effectively convey the rustic aesthetics of the Historic District (Attachment 1b). In addition to the concentration of resources, this segment is also important because the setting and feeling – two aspects of historic integrity – remain largely intact. This four-and-a-half mile section of Highway 1, perhaps more than any other stretch, imparts a sense of historic time and place and provides a feeling of what it might have been like to travel this highway during the 1930s (Figure 16). Therefore, particular care should be taken within this area to protect these key aspects of integrity.

Figure 16: This perspective looking south near Grimes Point illustrates how the original rugged character remains largely unchanged from 1937 (above) to today. (Photos: Caltrans)

With advancements in the safety performance of roadside barriers, application of standard designs along the scenic Big Sur Coast has been a source of contention. Contemporary standards have generally been associated with modern urban facilities. In recent years, however, Caltrans has invested in research and testing of aesthetic design solutions to increase the variety of options available for barrier treatments.[26]

The different types of roadside walls and rails existing in the corridor include:

Guardrail: metal beam guardrail on wood or metal post
Parapet walls: rock masonry feature atop stone retaining walls
Bridge rails: multiple types including concrete open balustrade (historic bridges), steel or concrete (or combined steel and concrete) rail types and solid concrete barrier

[26] California Department of Transportation, *California Highway Barrier Aesthetics*, January 2002

The following guidelines recommend the conservation of historic features and promote the development or application of alternative designs appropriate to the site-specific context. Note that there is no recommendation for uniform designs of barriers and guardrails (i.e., sameness in appearance) throughout the corridor. Since Highway 1 does not currently depict uniformity in design elements (appearance); attempting such uniformity would conflict with the rural, functional character and the eclectic qualities valued by the communities.

Roadside fencing along Highway 1 is another relatively common feature along the corridor. The most extensive sections of fencing are along agricultural landscapes such as the lower Big Sur Valley (El Sur Ranch) and parts of the Bixby and Garrapata Coast. Depending on location, roadside fencing may be privately or publicly installed and maintained.

Fencing types vary widely but most fit within a traditional rural image and contribute to the overall rural, historic character. In accordance with stakeholder input, the guidelines recommend that new fencing fit within the established rural character but do not promote uniformity of fencing.

Historic Features

This section refers to those elements identified above that make up the Carmel-San Simeon Highway Historic District. Consultation with the State Historic Preservation Officer is required for any actions that could affect features of the historic district.[27] Any maintenance, repair, rehabilitation, or modification of original rock masonry features must be conducted in accordance with the Secretary of the Interior's *Standards for the Treatment of Historic Properties.* Concurrence by the State Histoirc Preservation Officer would also be required for such actions.

1. For treatment of historic concrete bridge rails refer to Historic Bridges in Section 3.3, above.

2. Original rock masonry should be preserved and maintained, and restored or reconstructed when necessary. Maintenance, repair and rehabilitation of the historic rock masonry features must retain the integrity of the features. . As recommended for the historic retaining wall features (Section 3.3, above) the ultimate objective would be to retain the appearance and integrity of the original stonework.

3. Where feasible in terms of structural design and highway safety, restore the visual integrity of original stone masonry parapets that have been faced by metal beam guardrails. Such action would entail structural modifications of the parapets in order to meet current safety standards before the guardrails could be removed.

[27] A comprehensive approach to management of rock masonry features in compliance with Section 106 of the National Historic Preservation Act is also under development as of the date of these guidelines.

Figure 17: A stone masonry retaining wall topped by a castellated type of stone parapet, typical of the historic rubble masonry along Highway 1.

Figure 18: A contemporary metal beam guardrail spans an original gap between two historic stone masonry parapets (atop retaining walls). At other locations, metal beam guardrail has been placed in front of rock wall sections (i.e., between the road and the wall).

4. Short gaps between runs of original stone parapets are often bridged with metal beam guardrail sections. Where feasible and consistent with essential safety objectives, consideration should be given to establishing visual continuity by replacing the metal beam guardrail with more visually compatible barriers. To establish continuity, these barriers should be dimensioned and finished to match or closely resemble the original parapets.

   Note: This approach recognizes that bridging the gaps with replica stone masonry would be inconsistent with the historic context of the original parapets that are only built atop historic stone masonry retaining walls. However, this potential historic

inconsistency is balanced with the aesthetic advantage of overall visual continuity. In addition, specific visual design details could be developed to distinguish the original parapets from the new barrier sections.

Bridge Rail and Guardrail

1. Application of alternative design options for bridge rail on new structures, such as bridges and side-hill viaducts should be thoroughly explored. Attributes for alternative design should consider:

   - An aesthetically complete design that meets safety requirements for all users (i.e., motorists, cyclists, and pedestrians)
   - A design that allows views through the rail (a feature of the historic open balustrade rail)
   - An overall appearance that shares a family resemblance with the historic open balustrade rail, thus creating a sense of continuity among the historic bridges and new bridges

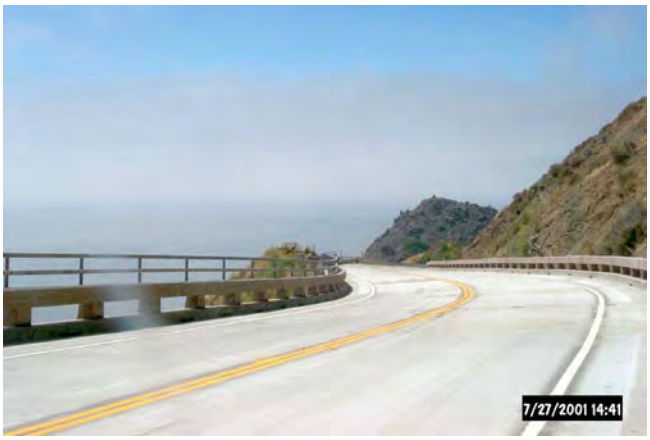

Figure 19: A view of the bridge rail on the Forest Boundary side-hill viaduct, known as Type 80 rail. The top (metal) railing shown on the left protects pedestrians and cyclists on the outbound side, and is not required on the inland side where there is little exposure to falling. This rail already has some of the desired attributes listed above and could potentially be modified to more closely resemble the historic concrete balustrade rail consistent with current safety standards. (Photo: Caltrans)

2. Newly constructed guardrails or any other roadside safety features should be designed for visual compatibility with the rural character. Natural-appearing materials, such as stone and timber, are preferred where they are appropriate to the local setting. Metal beam guardrail is commonly used along Highway 1 and is visually acceptable in most situations. Wood rather than steel elements are generally more consistent with the overall rustic character. Further options should be considered for application of alternative guardrail designs that are more compatible with the rural character. New

guardrail should incorporate natural or natural appearing materials such as stone, timber, or textured and stained concrete. Where steel elements are required based on other considerations, treatments that limit the overall visibility and effect of galvanized steel elements should be integrated to the extent maximum extent practicable. Treatments include minimizing the overall profile of the feature and etching or painting the steel elements.

3. In keeping with the Secretary of Interior's preservation principles, if new masonry is constructed, should be visually distinguishable rather than replicative of those that comprise the Historic District.

4. Where new locations for guardrail are identified, alternative guardrail types should be considered for installation that may be more visually compatible with the rural and historic context of the corridor. Specifically, applications of the following rail types should be considered in the corridor (Figure 20). [28]

   - Steel-backed timber guardrail (a timber rail backed with steel plate): compatible with the forested character typical of the Big Sur Valley and Carmel Highlands
   - Stone masonry guardrail: a constructed image that may be more appropriate to areas of settlement and to special locations such as vista points and scenic pullouts
   - Textured and stained or colored concrete guardrail

[28] The January 2002 report by Caltrans *California Highway Barrier Aesthetics* provides a thorough review of the existing flexibility for alternative barrier solutions.

Figure 20: On the left is a typical example of a galvanized metal beam guardrail that is used extensively along Highway 1 and is among the most common type used along highways throughout the United States. The timber guardrail (above right) is an alternative that could be considered for applications on the Big Sur Coast. The stone masonry guardwall (below right) is not yet available for use in California, but is being reviewed for acceptance in certain applications.

5. Finish treatments that call special attention to guardrails are not recommended. Treatments that subdue the reflectivity of standard galvanized metal are preferred.

6. End treatments for guardrail and bridge rails are also important visual elements. Where possible, barriers should be terminated with buried end sections, such as an adjacent slope or an earthen berm. The height of berms used for buried end sections must not exceed the height of the rail. Alternative end treatments such as barrels or crash cushions should be avoided unless site-specific conditions require them.

Fencing

1. The design of new roadside fencing along Highway 1 should contribute to the highway's overall rural and historic character. Fence types should be those traditionally associated with highways passing through rural and agricultural landscapes. Generally, chain link fencing should be avoided unless required for specific security purposes and only if more compatible options are not available. Depending on location and context, desirable fence types would include:

- Wire (barbed or smooth) on timber or steel posts
- Stretched cable on timber posts
- Timber post and rail (single or multiple rails)
- Timber post and split rail (applicable to forested settings)
- Timber post and pickets
- Hybrid designs combining a variety of these elements

2. Wherever possible, fencing should not create barriers to wildlife crossing Highway 1.

3. Diversity in fencing is valued; fence types selected should be compatible with the visual context and should not interfere with important views from the highway.

4. The rustic image of older fencing is recognized as also having particular cultural value, even as the fencing ages and deteriorates. In certain circumstances, deteriorated or functionally obsolete fencing may be retained solely based on its contribution to the character of the highway landscape.

Figure 21: A contemporary rustic-style fence along Highway 1 along the El Sur Ranch. Fences of this type are compatible with the rural image of ranching in this part of the corridor.

3.5 Signage

Underlying these guidelines is a fundamental principle that signs along the Big Sur Coast should exist only to the degree necessary to convey essential information to the traveler. This principle is strongly held by many of the people who live and work along the corridor. Stakeholders have been very vocal that current practices allow too many unnecessary signs, some of which are considered to be poorly designed or placed, which leads to the proliferation of visual clutter along the corridor. A program to systematically evaluate the need for signs along the corridor can help achieve an overall reduction of clutter.

Highway Signs

The design and placement of highway signage is highly controlled by a national standard, the *Manual of Uniform Traffic Control Devices (MUTCD)*, which requires uniformity of messages on the highway for safety reasons. The only signs allowed in the highway right-of-way are those installed and maintained by Caltrans and consist of the following:

- Regulatory: Black lettering on a white background communicates legal boundaries, such as speed limits, or white lettering on red as for stop signs.
- Warning: Black lettering on yellow background informs the driver about road conditions ahead such as curves and intersections.
- Construction: Black lettering on orange panels announces construction activities ahead; these signs are temporary in nature.

- Guide: White lettering on green, brown, or blue panels conveys navigational information such as distances, direction, and approaching points of interest. Should Highway Advisory Radio (HAR) be introduced along the corridor in the future, guide type signs (white lettering on blue panels) would be installed to inform travelers of the radio frequency on which information is broadcast.
- Changeable Message Signage (CMS): Illuminated message boards may be either portable or permanent and display variable messages; permanent signs can be programmed remotely.
- Recognition Programs: Other signs are often installed in response to special partnership or recognition programs. Examples of these include Adopt-a-Highway, Historic bridge preservation and formal memorials (such as the memorial sign program for victims of drunken drivers).

Highway Delineation

Delineators are another category of visible features in the right-of-way. Delineators include reflective paddle markers and other small reflective or non-reflective markers that provide a visual guide through curves, identify fixed objects, and identify roadway assets such as the locations of culverts and post mile indicators.

Signs beyond the Highway Right-of-way

Commercial businesses, private establishments and other public agencies also rely on signs to communicate to the traveler. A variety of such signs are visible from the highway and not within the authority or responsibility of Caltrans. Sign ordinances implemented by the counties of Monterey and San Luis Obispo regulate signage outside the highway right-of-way. The US Forest Service (Monterey Ranger District) and the California State Department of Parks and Recreation (Monterey and San Simeon Districts) are among the public land managers who use signs to communicate information to visitors. Such signs may or may not require a Coastal Development Permit by the local jurisdiction. Controlling signs beyond the right-of-way depends largely on coordination and cooperation among involved parties.

Figure 22: Commercial signs at Gorda. Although variety in signage design is valued, sign clutter is a common concern along Highway 1 and is most evident near settlements and commercial centers along the corridor. (Photo: Sam Farr)

General Guidelines

1. Signs within the highway right-of-way should be limited to the minimum necessary to ensure the safe operation and orderly movement of traffic.

2. Toward reducing overall clutter in the corridor, existing signage within the Highway 1 right-of-way should be evaluated as part of a regular comprehensive review to identify signs that are necessary for essential safe highway operation and orderly movement of traffic. Those signs not deemed necessary for that purpose should be so identified and listed for removal subject to agreement by the affected stakeholders.

3. Requests for new signs within the Highway 1 right-of-way will be evaluated for merit based on whether they meet a need for safe operation or orderly movement of traffic. Requested signs determined to be non-essential may only be installed with consensus agreement from affected stakeholders.

4. Subject to meeting necessary safety requirements, signs in the highway right-of-way should be mounted on wooden rather than steel posts for compatibility with the area's rural character.[29] Other materials may be considered where there are extenuating circumstances; any other material should be adapted to the extent necessary to be visually compatible.

[29] Use of wooden signposts could be limited due to safety considerations related to human contact with treated wood. Current safety regulations require that metal rather than treated wooden posts be used in any area where pedestrians are reasonably likely to come in contact with the posts.

5. The dimensions and mounting heights of signs should not be greater than required by regulation or reasonable visibility, and made consistent among signs of the same type or category.

6. When possible, internationally recognized symbols should be used in lieu of text to reduce the size of signs and increase their effectiveness.

7. Uniformity of non-regulated signage is not desired, nor is the development of a special thematic design specific to the corridor, as this would be in conflict with the essential visual character of the corridor, which values a more eclectic rather than uniform style.

Regulatory and Warning Signage

1. The placement, graphic design, size, face materials, and mounting heights of regulatory and warning signs are highly standardized for the express purpose of ensuring uniformity to convey critical information. To the extent that limited flexibility in the placement of signs may be afforded at a particular site, care should be taken to make the sign compatible with its surroundings to the extent practical; for example sign placement should avoid blocking a view.

2. Finishing treatments may be considered for back panels or frames where safety is not compromised and the treatment would be compatible with a specific corridor context. Such details should be kept simple and must not compete with sign content for attention. An example of such a treatment would be painting sign backs to reduce reflectivity and visibility to traffic coming from the opposite direction.

Construction Signage

Construction signs are temporary in nature and therefore no recommendations are included in these guidelines.

Guide Signage

Compared to regulatory and warning signage, a greater degree of flexibility and discretion is available in the design and placement of guide signage.

1. The size of guide signage should be the minimum necessary, particularly for signs directed primarily at local traffic (e.g., minor street signs, institutional entry signs).

2. Signage design details may be developed for specific contexts along the corridor, in consultation with corridor stakeholders. However, care must be taken to respect the essential rural and functional character of Highway 1, and design must comply with the Manual of Uniform Traffic Control Devices (MUTCD).

3. Wherever possible on sections where there are direct ocean views from the highway, guide signage should be located on the inland side of the highway.

4. Wherever possible to reduce the overall number of signs, north and south facing signs should be mounted back-to-back.

5. Alternatives to repetitive road signs should be considered to convey information (such as roadside no-parking zones) that is not directed to through traffic.

Figure 23: The guide sign marking the entrance to Pfeiffer Big Sur State Park (left) is typical of guide signs at recreational sites along Highway 1. Although this sign conveys essential information, the mixture of colors, borders, and print fonts is visually complex and detracts somewhat from the character of the highway (photo: Sam Farr). The guide sign photo at right is one of many guide signs that have been adapted to include the distance to Hearst Castle, a popular destination near San Simeon. The add-on component introduces contrasting color and occurs repetitively throughout the corridor. (photo: Caltrans)

6. Repetition of miles-to-destination signs is generally unnecessary and therefore should only occur at locations meeting Caltrans Traffic Manual guidelines and policies.

7. Although guide sign panel colors (green, blue, brown) have distinct applications, panel colors should not be mixed on combined-message guide signs.

   Note: This suggestion primarily applies to existing destination mileage signs that mix green and brown panel colors (as illustrated in the example in Figure 23, at right).

Changeable Message Signs

Portable Changeable Message Signs (CMS) have been introduced along Highway 1 on an as-needed basis (i.e., not installed as permanent features). Owing to their effectiveness for communicating current information regarding roadway conditions, changeable message signs are likely to remain in use unless or until a superior technology becomes available. Benefits of CMS include more accurate messaging and reduction of the number of permanent storybook signboards used to display temporary

messages when the highway is closed.[30] These benefits are offset by a "high tech" image that potentially compromises the rural, historic character of the corridor. The following guidelines are provisional while the evaluation of CMS in this corridor continues.

1. Consider CMS as an alternative to permanent storybook signs used to notify travelers about highway status and roadway conditions ahead
2. Any permanent CMS should be limited to the northern and southern approaches to the corridor (e.g., near Carmel and San Simeon) and strategically located at key decision points providing the traveler opportunities to make informed choice to proceed or take an alternate route (largely depending on Route 101 for north-south travel).

   Note: Portable CMS has been used for southbound travelers leaving the Big Sur Valley.

3. In keeping with the historic, rural, and natural character of Highway 1, any permanent installation of CMS should be carefully designed, placed and where feasible made inconspicuous when not in use to downplay its inherent "high tech" image. Modifications might include partial-screen planting and paint or alternative surface treatments for the hardware structure.

Recognition Programs

1. As a general guideline, recognition program signs should not be permitted along the Big Sur portion of Highway 1, in honor of preserving uncluttered views free of signs that are unnecessary for traffic flow. Cooperation with sponsoring entities should be sought to remove existing recognition signage.

2. As an exception to this general prohibition, sign requests related to recognition programs may be accepted only by consensus agreement of corridor stakeholders. Where consensus to install signs is achieved, stakeholder input to the overall design and placement must be sought.

3. Specific partnership programs, such as Adopt-a-Highway for litter control, and good works programs, such as the preservation of historic bridges, should be promoted with alternative means for recognition other than signage.

[30] Storybook signs have hinged panels that can be folded in and locked closed when there is no need to provide road status information.

Figure 24: Recognition signage at the north end of Bixby Creek Bridge is designed to be visible to approaching motorists but duplicates the stenciled text and date stamp on the concrete bridge rail. Alternatives should be considered that could effectively promote awareness about historic preservation efforts in the corridor without the need for signs.

Delineation

1. Roadside delineators should be limited to the size and frequency deemed necessary for highway safety (e.g., paddle markers marking the road edge and obstructions near the roadway). The need for additional delineation should be carefully evaluated; alternative designs that achieve the necessary visibility without adding to visual clutter would be encouraged.

2. Alternatives for non-reflective markers and those not required for highway safety (e.g., asset markers, such as those identifying culvert locations) should be evaluated. When possible, to reduce overall clutter, such markers should be removed, modified or replaced with less obtrusive markers.

3.6 Features along the Roadsides

This section addresses roadside features related to various services and functions along the highway. Unlike most other topics addressed in these guidelines, most of the roadside features described in this section are the responsibility of an entity other than Caltrans. Caltrans' own maintenance facilities are the notable exception. Features along the roadside are included here because the location, design, and appearance of these features can influence the overall visual experience of the corridor.

Lighting, overhead utility lines, and other communications facilities are part of the basic infrastructure that supports human occupation and travel through the corridor. Although

such features are mostly utilitarian in nature, in many locations they contribute significantly to the overall visual context of the corridor. Like communications facilities, highway maintenance facilities are utilitarian in nature, providing the home base for heavy equipment needed to maintain and repair the highway. Features such as roadside interpretation and other traveler amenities and alternative transportation facilities function primarily to support the enjoyment and convenience of the visitor or non-resident traveler. Other features mainly serve the needs and requirements of residents and business owners, but in many cases serve the traveling and recreating public as well. These include minor encroachments, off-highway signs, and entry features. Landscaping can provide authentic visual interest in itself, screen signs of human occupation, and frame or support spectacular coastal views. Roadside features in all of these categories can have visual impacts that range from positive and harmonious with the natural beauty to negative or distracting.

Lighting

1. In general, highway lighting is not compatible with the historic, rural character of Highway 1 and should not be used unless absolutely necessary for traffic or public safety.

2. To reduce overall clutter in the corridor, installations of new poles associated with lighting should be offset with removal if feasible of one or more similar features in the corridor.

3. Highway lighting may be appropriate in village areas and may take the form of traditional street lighting. Designs should be developed with community stakeholder input.

4. Where highway lighting is determined necessary for safety reasons, poles should be placed on the inland side of the highway or outside of areas open to ocean views.

5. In locations where lighting is required, layouts should minimize the number of fixtures required by carefully targeting areas to be illuminated while reducing overall lighting levels.

6. Poles and fixtures should be carefully selected for compatibility with the rural, historic character of the corridor to avoid associations with urban or freeway images.

Overhead Utility Lines

Overhead utilities are a prominent feature along certain sections of the Highway 1 corridor. Although undergrounding of overhead utilities is a general recommendation of these guidelines, it is recognized that some features have cultural value associations and may be considered to contribute to the overall historic, rural character of the corridor. The guidelines are focused on specific locations where traditional utility features may be considered acceptable but are recognized to have adverse visual impacts. (Figure 12 in Section 3.3 illustrates an example of such utilities along the Garrapata Coast).

For designated scenic highways, the State's Public Utilities Commission requires that new utilities be installed underground. Similarly, any project proposed that involves utility relocation also requires undergrounding.

1. The long-term strategy is to eliminate existing overhead utilities in the corridor by a program of undergrounding.

2. It is recommended that a survey be conducted, in cooperation with corridor stakeholders, to determine locations along Highway 1 where existing overhead utility lines may be considered visually acceptable for their contribution to to the corridor's cultural and historic character. For those considered to impose adverse visual impacts, recommended visual mitigation alternatives include:

    - Relocate utility lines away from the roadway to be less visible to travelers, where appropriate considering topography and land use constraints.

    - Co-locate power and communication lines into a single pole line on the inland side of the highway.

    - Paint or stain utility poles to recede visually into the background.

3. Support the prohibition of new overhead utility lines along the Highway 1 corridor.

Communication Facilities

As communication technology develops, so do opportunities to improve everyday and emergency services. Recent developments include installation of cellular phone towers and consideration of roadside emergency call boxes. In general, these represent introduction of contemporary elements, which if unmitigated, would be incompatible with the natural and cultural landscape of the corridor. Only those facilities that would be installed within the Highway 1 right-of-way would be controlled by Caltrans and may require review by the local (county) jurisdiction; all installations outside the right-of-way fall under the local jurisdiction. In Monterey County, the critical viewshed policy of the Big Sur LUP would apply where a feature was not clearly highway-dependent; due to its very nature, an emergency callbox might be considered a highway feature.

1. Any new feature proposed within the highway right-of-way must meet strict criteria for roadside safety and be evaluated for visual compatibility. Criteria that make installation within the right-of-way necessary must be clearly identified; other requirements for installation must also be clearly stated.

2. Innovative techniques and methods for camouflaging new installations are encouraged.[31] Where a feature is not dependent on being within the right-of-way (i.e., is not a highway feature), critical viewshed policies of the Monterey County LCP may prevent a visible installation.

3. Installation of new features on the west (ocean) side of the highway should generally be avoided, except where open views are obscured by natural landform features or if there are overriding considerations for safety, essential function, or accessibility.

[31] The proponent would be responsible for crash testing any feature not previously approved for use within state right-of-way.

Justification and criteria for locating features on the west side of the road must be need-driven and site-specific.

4. Programs to introduce visible features resulting from developments of new technology should be thoroughly evaluated to determine the site-specific needs, total numbers, locations, placements, and designs. All elements of the features must be evaluated, including mounting posts (materials, height and color), any lighting, and attached signs (color, size, symbols).

5. In support of reducing overall clutter in the corridor, approvals to place new features in the right-of-way may be conditioned on removal of non-essential features (such as unnecessary signs) or mitigation of features that are considered detractors to overall visual quality in the corridor.

6. Where possible, along coastal sections of Highway 1, highway-dependent features (such as call boxes) should be located in designated turnouts along the inland side of the highway and in areas where safe access could be afforded to both southbound and northbound travelers.

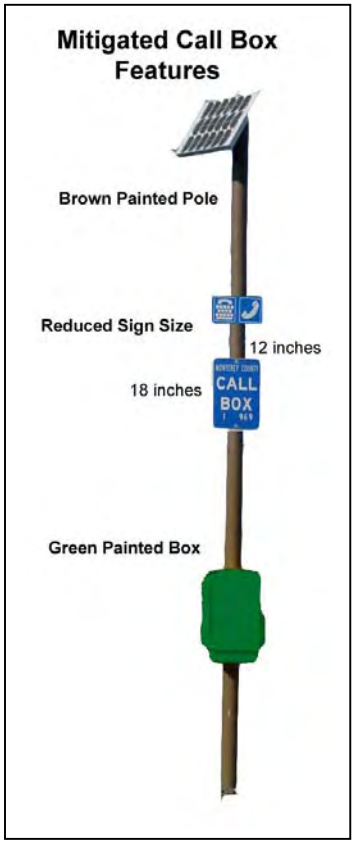

Figure 25: A typical call box (above left) along Highway 1 north in San Luis Obispo County illustrates the standard design used throughout California. To the right is the design proposed by the Transportation Agency for Monterey County (TAMC) featuring a brown painted steel pole and a green painted box, with the smallest allowable sign. Artist renditions (below left) offer higher visual compatibility for a rustic setting; however, as a non-standard design, is subject to crash testing before installation could be approved. (lower left & right images: TAMC)

Highway Maintenance & Facilities

Efficient and timely maintenance and repair of the narrow highway along the winding, mountainous, slide-prone Big Sur Coast could not be accomplished without fleets of trucks and heavy machinery as well as materials and small equipment permanently located within the corridor. The Department's maintenance operations are directed from three facilities, two of which are located along the Big Sur Coast. The southern portion of the corridor is serviced from a facility at Willow Springs; north to Garrapata Creek from the Big Sur Maintenance station; furthest north from the Monterey Area Maintenance Station (Attachments 1a-1c).

The basic functions of the maintenance facilities require parking for trucks and heavy equipment, storage for materials and temporary traffic control equipment, and office space. At the Willow Springs and Big Sur facilities, employee housing is also provided.

Special aesthetic considerations for related activities that are not mentioned elsewhere in these guidelines are the handling of excess material (temporary stockpiling) and the appearance of the Maintenance stations themselves.

With regard to the temporary storage of excess material (such as may be needed during clean-up after a landslide), the following considerations should be made:

1. Siting temporary storage sites on the southbound (west) side of the highway should be avoided where views to the ocean from the highway could be obscured. When such sites are unavoidable, the height of the material should not exceed the height of typical guardrail.

2. Temporary storage must not block coastal access points.

3. The duration of the storage is limited to the minimum time needed to transfer the material to its final destination, whether for re-use or to a permanent receiver site.

4. The potential for the excess material to contain seeds from invasive weeds must be considered in selecting even a temporary site, to avoid inadvertent spread of the weeds along the corridor.

The following measures should be considered when Maintenance facilities are being considered for remodeling, reconfiguration, or expansion:

1. Flat roofs, unrelieved front elevations, front-opening garages, and industrial colors should be avoided on any building visible from the highway.

2. Buildings should incorporate natural materials or be painted in earth-tone colors.

3. Industrial appearing facilities should be screened with plantings of native plants, shrubs, and trees.

4. Parking areas should be developed to the rear of buildings or oriented so as to minimize visibility from the road.

5. Driveways should be well-defined and no wider than necessary.

Landscaping

The primary objectives of vegetation management along the Big Sur Coast are conservation and preservation of native habitat. Vegetation management, however, serves a range of purposes beyond maintenance of botanical diversity. These may include erosion control, traffic safety, cultural values, and aesthetics, as well.

Landscape management frequently entails actions such as revegetation of eroded slopes, control of plants along the roadside and invasive weeds, planting of native plant species, and in some instances introduction or maintenance of plant specimens associated with human settlements. Maintaining authenticity in landscape, use of plant materials to screen signs of human use, and pruning or clearing to maintain coastal views can serve the goal of aesthetics.

Note: For this set of guidelines, the issue of landscaping is addressed in the context of its contribution to corridor scenic/aesthetic qualities. The focus is on the value of trees. Vegetation Management Guidelines are available separately. The latter guidelines address practices associated with the complete range of roadside vegetation.

1. For existing trees along the Highway 1 corridor:

    - Stands of native (indigenous) trees along Highway 1 should be protected and preserved where their presence is consistent with highway safety and operational needs.
    - Restoration of native stands of trees should be encouraged where they may have been impacted by highway development, where such restoration can be accomplished consistent with highway safety and operational needs.
    - Introduced (non-indigenous) trees along Highway 1 should be managed according to the cultural value they may provide; for example, trees associated with areas of human settlement may provide cultural value; Where no such association is made, removal of non-native trees should be considered.
    - Diseased trees should be removed in accordance with vegetation management best practices to avoid spread of disease.
    - When and where appropriate, the removal of trees greater than 4” diameter at breast height (DBH) should be offset with native vegetation.

2. For planting new trees along the Highway 1 corridor:

    - Trees may be a component of habitat restoration or proposed to mitigate for or enhance an existing use (such as screening or to provide shade).
    - Planting non-native trees is discouraged.
    - Generally, trees should not be planted on the ocean side of Highway 1 where they could interfere with open views.
    - Genotype and precise source of plant material should be considered and use of locally propagated stock is encouraged.

Roadside Interpretation & Traveler Amenities

The following guidelines address, in general terms, the provision of interpretive features and other traveler amenities along Highway 1. A comprehensive program would be needed to specify greater detail about whether or how to propose on-site interpretation and who would be responsible for different interpretive programs. Consensus has not yet been achieved regarding on-site interpretation. Likewise, no decisions have been made about providing roadside amenities for the benefit of the visitor. The following basic suggestions can help guide further discussion.

Interpretation

1. The concept of interpretation should be broadly defined and not limited to traditional physical elements such as signage and on-site displays. In keeping with the unfolding nature of exploring the Big Sur Coast, interpretation should be grounded in the dynamic mode of *discovery and revelation* rather than in the static mode of *explanation*. In support of the rugged scenic values of the coast, on-site interpretative features should be minimal in number and physically unobtrusive.

2. Interpretation should be provided according to a corridor-wide program developed with consensus among stakeholders that identifies themes, techniques, methods and media for communicating the information. Alternatives to on-site features and displays (such as recorded audio information for individual use) will be encouraged to promote the experience of self-guided discovery.

3. If on-site interpretation is determined desirable, a visual display at an appropriate site (such as a vista point) is recommended. In addition to overall visual compatibility with character, the design should be low profile and materials should be selected for durability, resistance to vandalism and low maintenance. The display should be an incidental rather than prominent feature. No display should interfere with a view or compromise the authentic experience of discovering the rugged Big Sur Coast. Interpretation should honor the value of an unscripted experience rather than a classroom or guided experience.

4. The following preliminary set of themes for interpretation should be considered in developing a corridor-wide program:

    - Cultural History: Patterns of settlement, construction of Highway 1.

- Geology: Insight to the natural changes that shape the Big Sur Coast, including landslides.
- Natural Environment: Pacific Ocean and the Monterey Bay National Marine Sanctuary, Ventana Wilderness, Big Creek Reserve; ecotypes along the corridor (redwood forest, central coast scrub, riparian); special status species (e.g., Smith's Blue Butterfly, Gray Whale, California Condor).

5. Ensure proper partnership commitments (lead agency, personnel and funding) are in place for effective development, design, construction, maintenance, repair and updating of content, as needed.

Other Amenities

1. Consider restoration of the rock masonry features at the historic roadside drinking fountains. Based on the potential for providing safe access, determine whether providing any other amenities (such as interpretation) would be appropriate for these sites.

2. Optimize use of existing visitor amenities, such as restrooms, that are available to the public at facilities managed by State Parks and Forest Service. Determine whether existing facilities are meeting demands or if developing partnerships could help achieve a higher service level for visitors.

3. In considering sites for additional amenities, look at upgrading existing vista points before proposing additional vista points along the Big Sur Coast[32]. In addition to parking, amenities might include picnic areas, restrooms and interpretation. A carefully developed process will be founded on effective stakeholder participation and formation of partnerships with key stakeholders; thorough collaboration would be used to develop criteria for site locations and amenities, size, design, construction, and maintenance of the facilities.

Provisions for Alternative Transportation

Alternative transportation provides a means for people to travel without need for an automobile. In this corridor, alternative users include transit riders (bus), bicyclists, and pedestrians. Equestrians generally avoid the highway but should be considered when evaluating non-motorized transportation along the corridor.

Public transit service is available seasonally between the Big Sur Valley and the Monterey Peninsula. Highway 1 is a designated segment of the Pacific Coast Bike Route where bicyclists share the roadway with motorists. Pedestrian activity is heaviest within the Big Sur Valley and in the area near the Esalen Institute. Portions of the California Coastal Trail, a trail proposed by the California Coastal Conservancy along the entire length of the state, are parallel or coincident with Highway 1 in this corridor.

The provision of flexible options to enjoy the coast route must be considered at every juncture in highway corridor management: planning, project development, design, construction and maintenance.

[32] This may be considered as part of the State's Safety Roadside Rest Program.

1. Ideally, pedestrians and bicyclists would be physically separated from the highway with a dedicated pathway. Although this objective may not be attainable throughout the corridor, opportunities should be explored for segments of high use. Even discontinuous segments of separated paths would be desirable if properly planned, designed and executed.

2. The geometric design of Highway 1 should safely accommodate pedestrians, bicyclists, and motorists as shared users of the highway. Wherever possible, the highway should include consistent paved shoulders (see Section 3.2 Travel Lanes and Shoulders).

3. While the preferred alignment for the California Coastal Trail would generally be separated from the highway, some sections will rely on the highway on an interim basis and on a long-term or permanent basis where no other options are available. Relationship to the future alignment of the trail should be considered in the planning and design of any highway improvement. Accommodation of the alignment might include an adequate shoulder or separated path, provision of an adequate bench (notch) on a fill slope, or design of a cantilevered walk or pedestrian bridge across a canyon. Provisions for pedestrian safety must be made; in some situations, natural or man-made protective barriers may be required. Refer to Section 3.4 for guidance on the design of such features.

4. Design elements for transit bus stops should be developed collaboratively with stakeholders and should include:

   - Safe and adequate stopping sight distance for passengers to cross the highway, where necessary.
   - Pullouts (paved or unpaved) entirely clear of travel lanes.
   - Surface treatments at waiting areas to withstand pedestrian use and prevent environmental degradation.
   - Considerations for shelter.
   - A sign and other features (bench or shelter) of a consistent and recognizable design, h are also visually compatible with the corridor. For example, the replacement of existing steel transit stop sign posts with wood posts is recommended.

Figure 26: An existing transit stop along Highway 1, showing the standard metal pole and panel bus stop sign. Although the sign conveys useful information, the image of the sign is urban, not rural in nature. (Photo: Sam Farr).

Minor Encroachments

A number of elements are allowed within the highway right-of-way through a permitting process for minor encroachments. Typical elements include rural mailboxes and utility boxes. These elements contribute to the overall visual character of the highway.

Rural residential mailboxes are typically the most significant of these elements. Particularly for those living along the corridor, mailboxes help identify neighborhoods. The community takes pride in some of the more colorful and rustic boxes along the route. By contrast, contemporary mailbox types, such as steel multiple-box units, are seen as more urban and generally out of character for the area.

Mailboxes are allowed in the highway right-of-way by encroachment permit. However, beyond ensuring safe placement, Caltrans has no authority over the choice of boxes. The US Postal Service regulates the fundamental aspects of box design.

1. Diversity in the style and design of mailboxes compatible with the rural character of the corridor is recommended.

2. In consultation with the US Postal Service, alternative design options should be pursued for rural or rustic mailbox shelters that consolidate separate boxes (as at an intersection) while avoiding the urban image.

3. All minor encroachment elements should be placed and designed to be as visually unobtrusive as possible and to match the highway's visual character in terms of materials and colors.

4. In support of reducing overall clutter in the corridor, approvals to place new features in the right-of-way may be conditioned on the removal or mitigation of non-essential features or those that are considered detractors to overall visual quality in the corridor.

Off-Highway Signs and Entry Features

Private signs and gates or other physical entrance features are regulated by Monterey County or San Luis Obispo County sign ordinances and certified Local Coastal Programs. Encroachment of entry features (other than a paved driveway connection) and signs into the state right-of-way is strictly prohibited.

1. Within limits that respect the rural, historic character of the corridor, diversity in off-highway signage on properties adjoining the highway is valued. In support of visual compatibility and preservation of views from the highway, careful consideration should be given to placement, scale and height, design themes, materials, and colors.

2. In general, the development of urban-style monumental entry features is discouraged, as are other roadside residential improvements that result in dominant features visually incompatible with the character of the Big Sur Coast. Private owners should be encouraged to remove, modify or remedy any such existing structures.

3. In controlling signs and entry features that are incompatible with the character of the Big Sur Coast, priority should be given to removing illegal encroachments within the state's right-of-way.

Figure 27: The entry sign at the Esalen Institute, south of Big Sur is simple, direct in its message, modestly scaled, and constructed of materials visually compatible with the rural, scenic character of Highway 1 (photo: Sam Farr).

4.0 Measuring Success

Success with the implementation of these guidelines may be difficult to measure quantitatively. One might propose a net loss of clutter, based on the existing number of intrusions by type (e.g., total number of signs). Another quantitative measure might be the number of alternative features or practices (by type) are implemented, whether as part of a major highway design project or as simple as a signpost. Success may also be judged qualitatively. An example might be the degree to which creativity is expanded toward solutions that achieve their intended objectives in manners more compatible with the natural and cultural setting of Big Sur.

The conservation focus in the corridor is a vision for simplicity. Highway 1 provides a focus of attention and Caltrans has a large role in exploring solutions sensitive to the context. However, achieving the desired aesthetic will depend on participation, commitment, and voluntary cooperation from a wide variety of stakeholders. It is hoped that these guidelines will inspire all stakeholders to explore individual contributions to improve the overall corridor aesthetic.

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APPENDIX 1

Metric Conversion for Highway Design Standards

Feet	Meters
2	0.60
4	1.20
8	2.40
10	3.00
12	3.70
32	9.75
40	12.20
48	14.60

APPENDIX 2

Highway 1 Traffic Volumes in San Luis Obispo and Monterey Counties

Route 1 Segments in San Luis Obispo & Monterey Counties[1]			AADT[2] Existing	AADT Projected	Peak Hour Volumes[3]		Peak % of ADT	% in peak direction	% Trucks in peak
#	Co.	Postmile	2001	2025	2001	2025			
5A	SLO	0.00/9.00	5100	8300	400	1000	12.0%	67% NB	5.0%
5B	SLO	9.00/10.38	8100	11800	1000	1500	12.3%	57% NB	11.0%
6	SLO	10.38/16.80	13000	27400	1650	3100	11.3%	60% NB	2.0%
7	SLO	16.80/17.80	26000	59700	2400	5500	9.2%	59% SB	2.0%
8	SLO	17.80/27.88	24500	33500	2150	3100	9.4%	64% NB	3.0%
9	SLO	27.88/32.10	16700	18600	1600	2200	11.7%	63% NB	3.0%
10A	SLO	32.10/36.80	9100	12400	1350	1800	14.6%	67% SB	5.0%
10B	SLO	36.80/56.39	8100	11100	1250	1800	15.9%	67% NB	1.0%
10C	SLO	56.39/71.34	2600	3300	380	600	18.8%	54% SB	1.0%
11	**SLO**	**71.34/74.32**	**2600**	**3300**	**380**	**470**	**17.8%**	**65% SB**	**1.0%**
12A	**MON**	**0.00/43.10**	**2800**	**3600**	**500**	**600**	**17.8%**	**60% SB**	**1.0%**
12B	**MON**	**43.10/51.20**	**4200**	**5600**	**740**	**960**	**17.8%**	**60% SB**	**1.0%**
12C	**MON**	**51.20/67.90**	**4800**	**6400**	**620**	**800**	**16.6%**	**60% SB**	**1.0%**
13	**MON**	**67.90/72.30**	**8200**	**10900**	**940**	**1190**	**16.4%**	**60% SB**	**1.0%**
14A	MON	72.30/75.14	61000	77500	5300	7800	10.0%	55% SB	2.0%
14B	MON	75.14/R78.12	81000	102800	7600	10300	10.0%	55% NB	2.0%
14C	MON	R78.12/R90.98	88000	261900	8900	26700	10.2%	65% NB	3.0%
15	MON	R90.98/R102.03	34500	43800	4000	5000	11.4%	65% NB	6.0%

[1]Segments in the Big Sur Coast area are highlighted in **bold**
[2]**AADT:** Annual Average Daily Traffic. Peak month traffic numbers would be higher than AADT.
[3]Peak hour is the hourly volume during the maximum-volume hour of the day.

ATTACHMENT 1: Area of Interest Maps