

Visual Impact Assessment

for

SR-140/FERGUSON SLIDE PERMANENT RESTORATION PROJECT

10-Mpa-140 PM 42.0/42.7

EA 06239-0P9200



April 2009

Prepared for:

California Department of Transportation (Caltrans)

District 10

2015 East Shields Avenue, Suite 100

Fresno, CA 93726

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ACRONYMS AND ABBREVIATIONS

Caltrans	California Department of Transportation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CSS	Context Sensitive Solutions
EB	Eastbound
FHWA	Federal Highway Administration
NB	Northbound
NEPA	National Environmental Policy Act
SB	Southbound
SER	Standard Environmental Reference
SR-140	SR-140
USDOT	United States Department of Transportation
WB	Westbound

Executive Summary

The California Department of Transportation (Caltrans) has proposed to restore a portion of State Route 140 (SR-140) in Mariposa County that was damaged by the Ferguson Rockslide. Currently, there is a temporary bypass around the rockslide that includes two temporary bridges across the Merced River and a one-lane paved section on Incline Road. The bypass is a one-way-at-a-time lane and is signal controlled with 10 to 15-minute wait times between cycles. SR-140 is known as the “All -Year Highway” and prior to the slide was the preferred route for buses and tourists accessing Yosemite National Park.

Alternatives. This report looks at the impacts to the visual environment of six different Build Alternatives, one with two variations, plus a no-Build Alternative. Each of the Build Alternatives extends the current temporary bypass during construction of the permanent solution. Upon completion of the new SR-140, all elements of the temporary bypass would be removed. The Alternatives evaluated in this study are:

- No-Build Alternative
- Alternative C – Open-cut Realignment Alternative
- Alternative R – Rock Shed Alternative
- Alternative S – Viaduct Realignment Alternative
- Alternative S2, Variation 1 (S2-V1) – Viaduct Realignment with Tied-arch Bridge Alternative
- Alternative S2, Variation 2 (S2-V2) – Viaduct Realignment with Slant Leg Bridge Alternative
- Alternative T – Northerly Tunnel Realignment Alternative
- Alternative T-3 – Tunnel Realignment under Slide Alternative

Regulatory Setting. This report was prepared following the guidelines established by the Federal Highway Administration (FHWA) *Visual Impact Assessment for Highway Projects* (FHWA, 1981). The existing visual quality is analyzed based on three criteria: vividness, intactness, and unity. For this report, Key Views were developed based on the User Groups found in the project area: Drivers/Roadway Users, Merced River Users, and Hiker/Trail Users.

SR-140 is a designated State Scenic Highway, with the intent of protecting the natural scenic beauty surrounding the highway. Caltrans is the agency charged with overseeing the Scenic Highway Program for the State of California. Caltrans also has policies in place to develop

Context Sensitive Solutions to better develop the state highway system that places preservation of historic, aesthetic, scenic, natural environment and other community values on an equal basis with transportation safety, mobility, economics, and maintenance.

The Merced River has been classified as a Wild and Scenic River and is managed by the federal government. The federal classification does not preclude development within a designated river viewshed, but the river should be managed so that the values that caused the river to be classified are protected and enhanced. Within the project area, the Merced River has been classified to be managed as a recreational resource.

Key Findings. The project setting is in the western foothills of the Sierra Nevada Mountains. The area is characterized by steeply rolling hills vegetated in a mixed Oak Woodland forest. The primary man-made elements within the area include the existing SR-140 roadway and associated rock cuts, and an electrical transmission line that roughly parallels the highway within the project area. Views within the project area are somewhat limited by the steep topography.

Typically, when a visual analysis is conducted, the project area is categorized by landscape units. Because of the relatively small area analyzed, the use of landscape units does not easily translate to this project area. The project area as a whole is one landscape unit. However, there are three distinct viewer groups that will perceive the project in different ways. The three user groups are: SR-140 Driver/Roadway Traveler, Merced River User, and Hiker/Trail User.

The overall visual quality of the project area is rated high, with high vividness and unity, and moderately high intactness. The high ratings are due in large part to the aesthetic appeal of the vegetated slopes and the patterns created between the vegetation and the rock outcroppings. Many views are relatively free of encroaching elements, except for the roadway and transmission lines. It is predicted that viewers would have moderate to high sensitivity to changes in the visual environment within the project area, since the area has been recognized for its scenic qualities. Individuals that live in or frequently visit the area would generally have a greater sensitivity than tourists or infrequent travelers to the area.

Most of the Alternatives (Alternatives C, S, S2-V1, S2-V2, and T) include bridges across the Merced River. These bridges would replace the existing bridges that are part of the temporary bypass. The bridges from each Alternative would differ in height and profile depending on the newly proposed road alignment for each Alternative. Also common to all Alternatives is the upgrading and use of the existing temporary bypass during construction. After completion, all elements of the temporary bypass would be removed and the area restored.

portion of the wall along the river is anticipated to be approximately 15 to 20 feet. Some rock currently at the base could be replaced after construction to reduce the perceived height of the wall, but this would be limited to allow for the free flow of the river.

The anticipated changes to the visual quality of the project area by User Group for the Rock Shed Alternative are:

- Driver/Roadway Travelers: Lower the overall visual quality for the area from high to moderate, with moderate vividness, moderately low intactness and moderate unity.
- Merced River Users: Lower the overall high visual quality to moderately low with moderate vividness, moderately low intactness, and moderately low unity.
- Hikers/Trail Users: Lower the overall high rating to moderately high visual quality, with high vividness, moderately low intactness and moderately low unity.
- **Alternative S – Viaduct Realignment Alternative:** The roadway in the viaduct realignment Alternative would be lower on the hillside than in the C or T Alternatives, although the proposed roadway would still be higher than the existing temporary bridges. The bridges would have to be longer than these other two Alternatives, given the skew of the roadway. This siting would still open up views along the river that are currently not available to roadway users. The portion of the new alignment on the hillside between the two bridges, the viaduct portion of the alignment, would be cantilevered over a retaining wall and would be approximately 360 feet in length. Cantilevering the roadway through this portion allows the roadway to shift out from the hillside slope and therefore reduces the required cut slope to the hillside. The roadway would have a 10-foot debris bench along the uphill side of the viaduct. The retaining wall along the cantilevered section of roadway would add a new element to the existing visual environment which would be visible to both the river and trail users.

The anticipated changes to the visual quality of the project area by User Group for the Viaduct Realignment Alternative are:

- Driver/Roadway Travelers: Lower the overall visual quality for the area from high to moderately high, with moderately high vividness, moderate intactness and moderate unity.

- Merced River Users: Lower the overall high visual quality to moderate with moderately high vividness, moderate intactness, and moderate unity.
- Hikers/Trail Users: Lower the overall high rating to a moderate visual quality rating, with moderately vividness, moderate intactness, and moderate unity.
- **Alternative S2-V1 – Viaduct Realignment with Tied-arch Bridge Alternative:**

This Alternative has many of the same visual impacts identified under the S Alternative, including the replacement of the two temporary bridges with two new bridges over the Merced River, and the inclusion of a viaduct section between the two bridges. However, Alternative S-2 has a slightly altered alignment from the S alignment. This alignment has the bridges at a greater skew which translates into longer bridge spans than in the S Alternative. The skew allows the bridges to be a tied-arch bridge. Given that many of the existing bridges along other portions of SR-140 were developed in the 1930s and 1940s, the design of a tied-arch bridge appears to better fit within the existing environment than a smooth concrete structure. The anticipated height of either the arch or truss structure is anticipated to be 110 feet and 130 feet above the bridge deck, respectively for the two bridges. The use of this type of bridge architecture would be anticipated to enhance the overall aesthetics of the project area with their historic image and scale in the landscape. Between the two bridges, a viaduct section would be cantilevered over a retaining wall, similar to Alternative S. However in this Alternative, the viaduct section would be longer at 510 feet instead of the 360 feet.

The anticipated changes to the visual quality of the project area by User Group for the Viaduct Realignment with Tied-Arch Bridge Alternative are:

- Driver/Roadway Travelers: Retain the overall high visual quality for the area, with high vividness, moderately high intactness, and high unity.
- Merced River Users: Retain the overall high visual quality with high vividness, moderately high intactness, and moderately high unity.
- Hikers/Trail Users: Low the overall high rating visual quality rating to moderately high, with high vividness, moderately high intactness, and moderately high unity.
- **Alternative S2-V2 – Viaduct Realignment with Slant Leg Bridge Alternative:**

This Alternative has many of the same visual impacts identified under the previous two S Alternatives, including the replacement of the two temporary bridges with two new bridges over the Merced River, and the inclusion of a viaduct section between

the two bridges. However, Alternative S2-V2 has a slightly altered alignment. Within the Ferguson Slide Project area, the design of the Slant-Leg Bridges would provide an iconic structure within the landscape. The length of the two bridges combined with the relatively short viaduct section between should translate into less disturbance in the landscape with less rock cut required along the roadway (due to the short viaduct section) and limited disturbance associated with each column pad location due to the need for fewer columns. It is anticipated that the use of this bridge architecture would enhance the visual quality of the project area.

The anticipated changes to the visual quality of the project area by User Group for the Viaduct Realignment with Slant Leg Bridge Alternative are:

- Driver/Roadway Travelers: Retain the overall high visual quality for the area, with high vividness, moderately high intactness, and high unity.
- Merced River Users: Retain the overall high visual quality with high vividness, moderately high intactness, and high unity.
- Hikers/Trail Users: Retain the overall high rating visual quality rating, with high vividness, moderately high intactness, and high unity.
- **Alternative T – Northerly Tunnel Realignment Alternative:** The tunnel Alternative follows the same alignment as the Open Cut Alternative (C). The impacts associated with the bridge elements are the same for both Alternatives, since these elements are located in the same positions and at the same scale. The major difference between the two is the use of a tunnel in place of the open cut slope proposed in Alternative C. The tunnel would leave most of the existing hillside and its associated vegetation intact. There would likely be some cutting of the slope at the tunnel portals, although this is anticipated to be minor. The width of the tunnel would include a 4-foot emergency walkway for a total width of 44 feet. The tunnel is anticipated to be 725 feet long.

The anticipated changes to the visual quality of the project area by User Group for the Northerly Tunnel Realignment Alternative are:

- Driver/Roadway Travelers: Lower the overall visual quality for the area from high to moderate, with moderately high vividness, moderate intactness and moderate unity.
- Merced River Users: Lower the overall high visual quality from high to moderately high with high vividness, moderate intactness, and moderately high unity.

- Hikers/Trail Users: Lower the overall high rating to moderately high visual quality, with high vividness, moderate intactness and moderately high unity.
- **Alternative T-3 – Tunnel Realignment under Slide:** In this Alternative, a tunnel would be bored under the base of the slide into the side of the adjacent hill. The tunnel would be approximately 2200 feet long. The new roadway through the tunnel would have the same two 12-foot lanes and 8-foot shoulders as the other Alternatives and would also include a 4-foot emergency walkway for a total width of 44 feet. For those outside of the tunnel the two tunnel portals would be the most visible element to the project.

The anticipated changes to the visual quality of the project area by User Group for the Northerly Tunnel Realignment Alternative are:

- Driver/Roadway Travelers: Lower the overall visual quality for the area from high to moderately high, with moderately high vividness, moderate intactness and moderate unity.
- Merced River Users: Retain the overall high visual quality with high vividness, high intactness, and high unity.
- Hikers/Trail Users: Retain the overall high visual quality, with high vividness, high intactness and high unity.

The placement of bridges and other structures in scenic locations, like that found within the project area, can yield dramatic results, as shown by both the Linn Cove Viaduct of the Blue Ridge Parkway in North Carolina and the Hanging Lake Viaduct in Glenwood Canyon, Colorado (see Figures 50 and 51). The success of these man-made elements within scenic natural surroundings relies primarily on the architecture of the bridge along with careful siting of the bridge structures in the landscape.

Twenty-five mitigation measures have been identified to remove or reduce the projects visual impacts. In addition to the mitigation measure, the time frame for application, responsible party and possible methods for application are also identified. The proposed mitigation measures address:

- Development of a set of aesthetic guidelines for the project
- Adherence to Context Sensitive Design Solutions
- Providing landscape architectural oversight of the project

- Structural aesthetics
- Preservation of existing vegetation
- Grading
- Landscape and maintenance of the project area

If in the Ferguson Slide area of SR-140 a bridge or viaduct type structure is the final selected Alternative, considerations should be made to address its siting in the landscape and the form of the structure's architecture. Views of this potential structure will be important for people on or along the river and for trail users since they are the groups that will view the structure. For roadway users, any new alignment should afford a pleasant driving experience, exposing the motorists to the diversity and richness of spaces, colors, textures, scale and contrasts within the Merced River Canyon.

1. Project Description and Alternatives

1.1 PURPOSE OF REPORT

The purpose of this report is to describe the anticipated changes to the visual environment along SR-140 (SR-140) in Mariposa County, California associated with the Ferguson Slide Permanent Restoration Project. Methodologies for the evaluations described in this report follow those outlined by the Federal Highway Administration (FHWA) *Visual Impact Assessment for Highway Projects* (1981).

1.2 PROJECT DESCRIPTION, PURPOSE, AND NEED

The California Department of Transportation (Caltrans) proposes to restore the section of SR-140 in Mariposa County that was damaged by the Ferguson Rockslide. The total length along SR-140 of the project is 0.7 miles. If traveling eastward from Briceburg, the project sits approximately 8 miles to the east. Westward from El Portal, the project is approximately 7.6 miles to the west. Within the limits of the proposed project, SR-140 is a two-lane, undivided highway.

1.2.1 Project Description

Unusually heavy rainfall in the Merced River Canyon in March and April 2006 destabilized the steep hillside above SR-140. The first rockslides in the area began on April 29, 2006. Since April 2006, rockslides have damaged and blocked SR-140 between Mariposa and El Portal.

In August 2006, Caltrans completed the construction of a temporary detour that bypassed the rockslide and reopened SR-140 to vehicles less than 28 feet in length. The temporary detour consists of two single-lane bridges that cross the Merced River upstream and downstream of the rockslide and connect to a one-lane paved section of Incline Road directly across from the rockslide. Traffic is controlled on this one-lane detour by signals that allow the passage of one-way traffic in 10 to 15 minute intervals. The closure of SR-140 and the restricted vehicle length on the temporary detour has created hardships for residents and businesses in the area, as well as prevented tour buses and deterred many recreational travelers from using SR-140 to access Yosemite National Park.

Mariposa County had already seen a drop in tourism-generated revenue, mostly due to the vehicle length restriction created by the temporary detour of which buses and recreational vehicles were prevented from utilizing the area. And with the new delay of providing a

permanent solution, Caltrans, regulatory agencies, and Mariposa County officials began working on another temporary solution that would accommodate vehicles of greater lengths while the permanent project was being developed. The new temporary solution involved the construction of two temporary bridges across the Merced River on a skewed alignment adjacent to the existing temporary bridges. These bridges would serve as the new temporary SR-140 detour and the existing temporary bridges would be removed. The skewed alignment of the bridges allow for a larger turning radius that can accommodate vehicles up to 45 feet in length. Traffic is also controlled on this new one-lane detour by signals that allow the passage of one-way traffic for 10 to 15-minute intervals.

SR-140 is often referred to as the “All-Year Highway” and is the preferred route for accessing Yosemite National Park since other routes are more difficult to maneuver and subject to harsh weather during winter months. Restoring SR-140 would give tourists direct and easy access to Yosemite, revitalize businesses in Mariposa County that cater to tourism, and provide residents of Mariposa County an uninterrupted access between towns and communities; Figures 1 and 2 show the project vicinity and location maps.

1.2.2 Project Purpose

The project would reopen and restore full access to the section of SR-140 damaged by the Ferguson rockslide.

1.2.3 Project Need

The Ferguson rockslide damaged and covered a section of SR-140 approximately 650 feet wide by 800 feet long. The rockslide also encroached into the Merced River nearly 30 feet. Earlier rockslides have damaged SR-140 in the past. Since 1999, nearly \$19.5 million have been spent on rockslide removal, slope stabilization, rockfall barriers, and the construction of the temporary detours. The permanent restoration of SR-140 would maintain full access for all types of commuters ranging from recreational to business and eliminate future repair costs caused by the Ferguson rockslide.

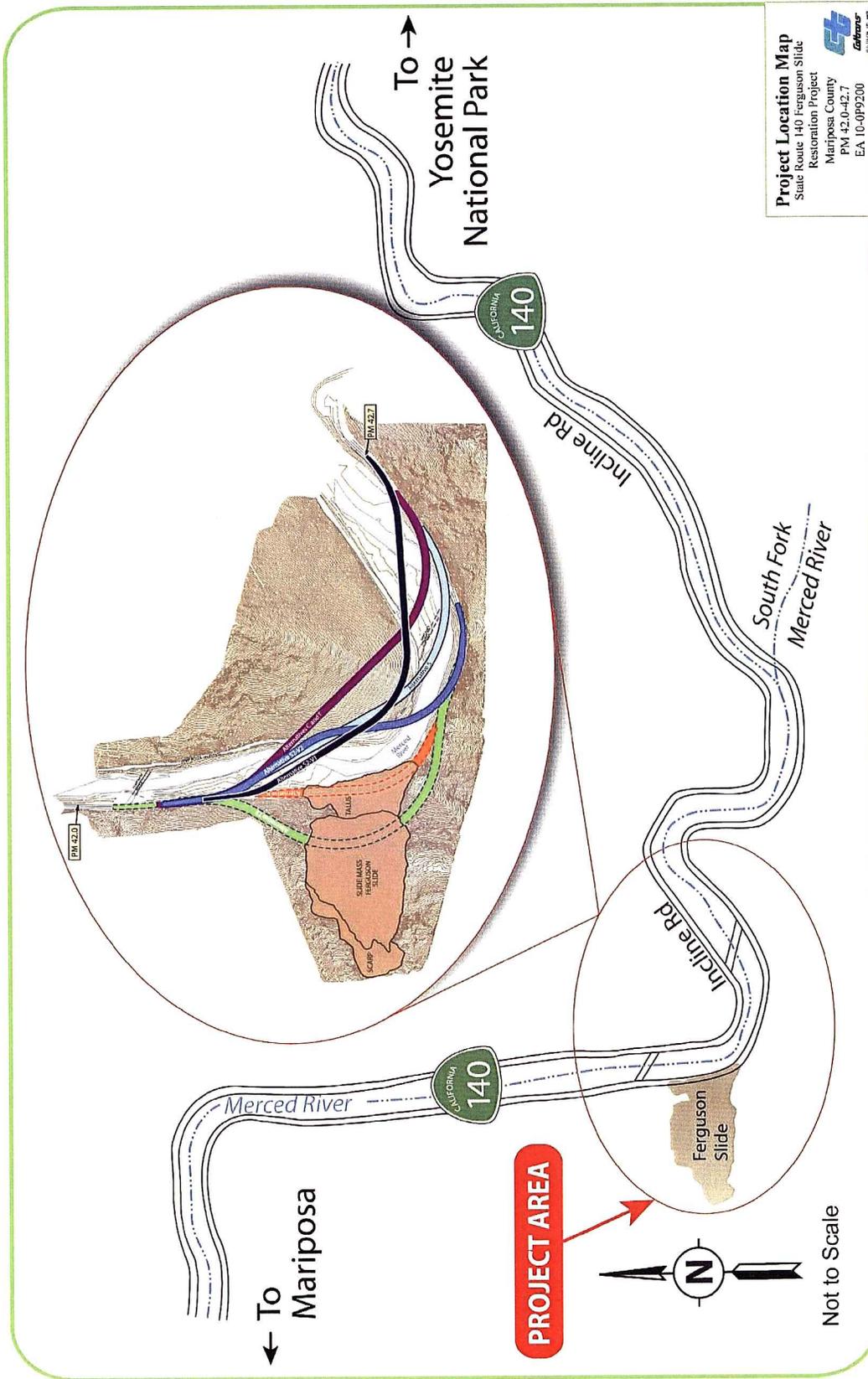
Currently, motorists must use a temporary detour route to travel this portion of SR-140. Restoration of SR-140 would eliminate the inconvenience of the detour and provide unrestricted access to all essential traffic utilizing SR-140 between the town of Mariposa and Yosemite National Park. The detour was designed to be a temporary solution with an agreement with regulatory agencies that the structures used for the detour would be removed once a permanent solution could be constructed. Six Build Alternatives and a No-Build Alternative are being considered

With the initial closure of the highway, approximately 2.5 hours was added to a one-way trip to and from the Mariposa and Yosemite areas. Distances between 70 and 90 miles were added to the commutes of motorists. When the temporary detour opened, travel time for those vehicles that could use the road were still delayed by at least 15 minutes in either direction by a stoplight that controls one-lane bridge traffic. With the new temporary bridges, any vehicles over 45 feet in length are unable to pass through the detour and must travel on routes that are harder to maneuver with larger vehicles, drive longer distances on these routes -- increasing travel times, and drive in harsh weather conditions during winter months. Yosemite National Park and communities in Mariposa County rely heavily on full access for many types of transportation that serve tourism and residents of the area. SR-140 is essential in supporting the Mariposa and Yosemite communities because the route is used for supplying goods and services.

Businesses of Mariposa and El Portal, as well as Yosemite National Park and tourist companies using the park are all being hurt economically as a result of the closure. Yosemite National Park, and communities in Mariposa County, rely heavily on full access for many types of transportation that serve tourism and residents of the area. SR-140 is essential in supporting the Mariposa and Yosemite communities because the route is used for supplying goods and services. Prolonged closure of SR-140 would continue to affect the economic vitality of Mariposa County, where tourism is the primary source of revenue.

Most of the existing emergency services are based on the Mariposa or west side of the Ferguson rockslide and cannot easily respond to emergencies or requests from El Portal and Yosemite Village. The stoplights at the beginning and end of the detour route impede emergency access with time delays, and certain emergency vehicles and equipment cannot be transported through the rockslide area due to the restriction on vehicle length. Timely access to medical care, potential fires, and highway accidents is hindered because of the partial closure of SR-140. An aerial view of the project area can be seen in Figure 3.

Figure 2: Project Location Map



1.3 ALTERNATIVES

This section describes the proposed action and the design Alternatives that were developed by a multi-disciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. The Alternatives are:

- Alternative C (Open-cut Realignment)
- Alternative R (Rock shed)
- Alternative S (Viaduct Realignment)
- Alternative S2-V1 (Viaduct Realignment w/ Tied-Arch Bridge)
- Alternative S2-V2 (Viaduct Realignment w/Slant-Leg Bridge)
- Alternative T (Northerly Tunnel Realignment)
- Alternative T-3 (Tunnel under Slide); and the No-Build Alternative

For each alternatives other than Alternative 'S', the existing temporary bypass would be used during construction. For Alternative 'S', the current one-lane detour along Incline Road would be extended. This extension would allow traffic to continue to flow through the construction area while the permanent bridges are being constructed. The temporary detour would be extended 393 feet and raised 5.5 feet to accommodate possible flooding. Incline Road would also be paved with asphalt concrete to match the existing detour. The newly formed embankment slopes would be protected with the rock placement. The temporary signal system would be relocated upstream to facilitate the one-lane traffic operation at the newly constructed temporary bridge.

None of the Build Alternatives require utility relocations.

Once construction is complete for the selected Build Alternative, the temporary detour would require removal. All temporary bridges would be removed, including the pilings, piers, abutments, and pedestals to at least one foot below the ground. The embankments behind the abutments would be removed and the slopes would be restored to their original contours.

At the request of the National Park Service, all of the Build Alternatives would maintain access to Incline Road for pedestrians and bicyclists or other recreational users. The existing bypass pavement on Incline Road would be removed and the trail restored to its natural state.

Figure 3: Project Area

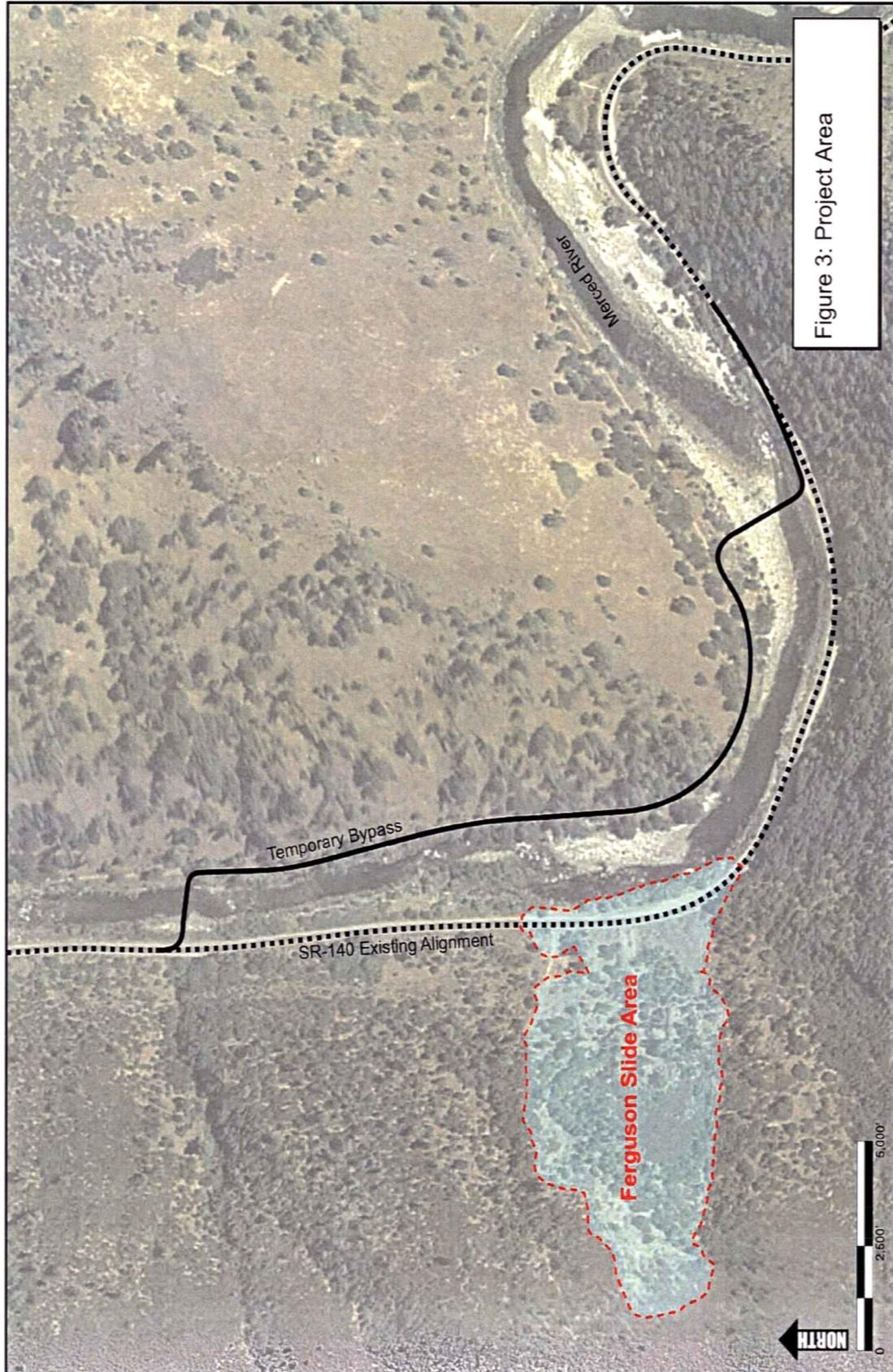


Figure 3: Project Area



1.3.1 Open-cut Realignment Build Alternative (Alternative C)

This Alternative would realign the highway to the northeast, spanning the Merced River and bypassing the rockslide. SR-140 would cut through the mountain across from the rockslide and then span back across the river where it would meet the existing alignment. Two bridges would be constructed to cross the river at the northern and southern ends of the realignment. The lengths of the bridges would be 550 feet and 650 feet. The new roadway would be benched into the slope of the hillside creating a cut slope on both sides of the road. The uphill cut slope may exceed 125 feet in height, with the downhill cut measuring up to approximately 10 feet. The highway would be constructed with two 12-foot lanes and 8-foot outside shoulders. A 20-foot-wide terrace would be constructed on both sides of the highway and between the cut slopes to catch falling rock debris. See the cross-section and proposed alignment in Figure 6 on Page 16.

1.3.2 Rock-Shed Alternative (Alternative R)

The Rock Shed Alternative proposes to construct a rock shed (cut and cover tunnel) through the talus of the slide along the existing SR-140 alignment (see Figure 7 on Page 17). The rock shed would be 760 feet long providing two 12-foot lanes, 8-foot outside shoulders and a 4-foot emergency egress walkway on the river's side. The rock shed would be a reinforced concrete box structure supported on 20-foot-long concrete piles and anchored with tie-backs into the west canyon wall. Retaining walls would be required on the approach ends of the structure to retain cuts that would be necessary for construction, as well as to retain backfill material that would be placed on top of the structure to provide protection from future slides and rockfalls. No on-site maintenance and operations facility would be necessary within the project area for this alternative. Instead a remote facility would be located at the Midpines Maintenance Station.

1.3.3 Viaduct Realignment Alternative (Alternative S)

This Alternative would realign the highway to the northeast, spanning the Merced River with two bridges at the north and south ends of the realignment, and bypassing the rockslide with a hillside viaduct and retaining wall. The lengths of the bridges would be 805 feet and 725 feet. The viaduct and retaining wall section would be 400 feet long and supported by a terrace on the hillside and columns. Because the new roadway will be partially supported on a terrace into the hillside, this Alternative would include a cut slope along the hillside for approximately 300 feet to a maximum anticipated height of 12 feet. The highway would be constructed with two 12-foot lanes and 8-foot outside shoulders. See the cross-section in Figure 8 on Page 18.

1.3.4 Viaduct Realignment w/ Tied-Arch Bridge Variation (Alternative S2-V1)

This Alternative is similar to Alternative S in that it proposes to realign SR-140 by constructing two bridges across the Merced River at the north and south ends of the realignment, and a side-hill viaduct/retaining wall on the north side of the river between the two bridges. See Figure 9 on Page 19 for the proposed alignment of this Alternative. The roadway would provide two 12-foot lanes and 8-foot outside shoulders. This Alternative differs from the other Alternative S bridges by providing longer bridge spans on tangent alignments to accommodate an Alternative tied-arch bridge type. The downstream bridge would be 700 feet long and the upstream bridge will be 790 feet long. The height of these Alternative bridge types would be between 110 feet and 130 feet above the bridge deck. The viaduct between the two bridges is approximately 510 feet in length. An example of a tied-arch bridge can be seen in Figure 4. A tied-arch structure has the bridge support above the structure in an arch form with cable tied to the deck.

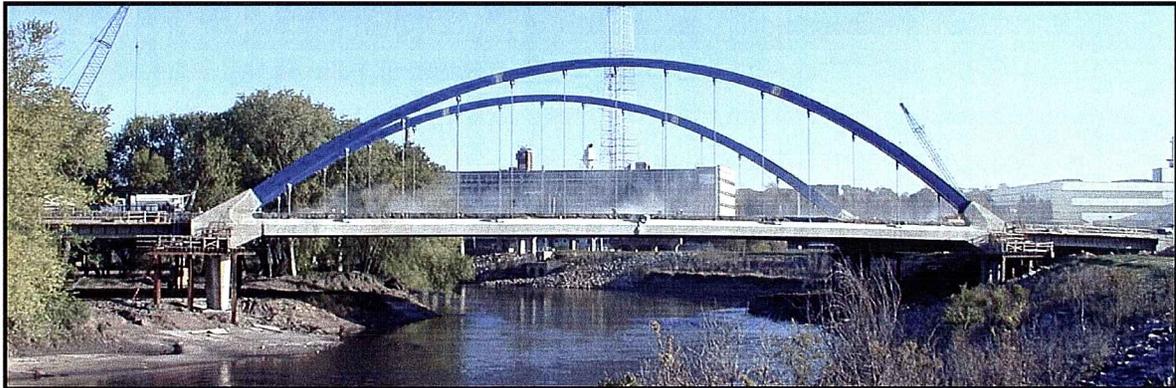


Figure 4: Example of a Tied-Arch Bridge

1.3.5 Viaduct Realignment w/ Slant-Leg Bridge Variation (Alternative S2-V2)

The Slant-Leg Bridge Alternative is similar to the Tied-Arch Bridge Alternative, differing only in bridge type and having a slightly different alignment to allow the bridge type to fit within the surrounding landscape. Like the other S Alternatives, there are two bridge structures connected by a viaduct section. See Figure 10 on Page 20 for the proposed alignment and cross-sections. As with the other Alternatives, two 12-foot lanes each with an 8-foot shoulder are proposed. The downstream bridge would be approximately 860 feet long, while the upstream bridge would be 670 feet, which is much shorter than the S2-V1 Alternative. The viaduct section between the two bridges is relatively short, compared to the previous two Alternatives, at approximately 66 feet.

As in the S2-V1 Alternative, an Alternative bridge type is considered; in this case a slant leg bridge. An example drawing of this bridge type can be seen in Figure 5. This bridge type has angled supports from a single point. Unlike the tied-arch structure, where the support is visible above the bridge, the slant leg bridge structure is supported from below.

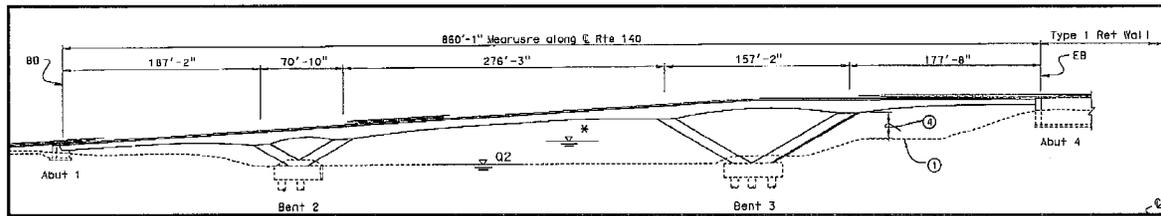


Figure 5: Elevation of a Slant-Leg Bridge

1.3.6 Northerly Tunnel Realignment Alternative (Alternative T)

This Alternative would realign the highway to the northeast, spanning the Merced River and bypassing the rockslide. SR-140 would tunnel 725 feet through the mountain across from the rockslide and then span back across the river where it would meet the existing alignment. Two bridges would be constructed to cross the river at the north and south ends of the realignment. The lengths of the bridges would be 550 feet and 650 feet. The highway and tunnel would be constructed with two 12-foot lanes and 8-foot outside shoulders. The tunnel would also contain a 4-foot walkway. See the cross-section in Figure 11 on Page 21. Similar to the Rock Shed Alternative, a maintenance and operations facility for this alternative would be located at Caltrans' Midpines Maintenance Station.

1.3.7 Tunnel Realignment under Slide Alternative (Alternative T-3)

This Alternative would realign SR-140 into a tunnel under the area of the rockslide. The tunnel would be 2200 feet long providing two 12-foot lanes, 8-foot outside shoulders and 4-foot emergency walkways. See Figure 12 on Page 22 for the alignment of this Alternative. Similar to the Rock Shed Alternative, a maintenance and operations facility for this alternative would be located at Caltrans' Midpines Maintenance Station.

1.3.8 No-Build Alternative

The No-Build Alternative would leave SR-140 damaged and blocked by the Ferguson rockslide. As a result of the No-Build Alternative, the temporary detour would become the permanent SR-140 alignment. The traffic signals controlling the single-lane access through the detour would remain. The structures for the temporary detour were constructed during a declared emergency and were designed as a temporary solution to the closure of SR-140. These structures would not meet standard design features nor would the detour meet the purpose and need of the project.

1.3.9 Alternatives Considered but Eliminated

Three additional Alternatives were initially considered – Incline Road Realignment (Alternative A), Slide Removal (Alternative E), and Tunnel Realignment through Mountain Alternative (Alternative T-2). Alternative A would have realigned SR-140 to Incline Road, widening the existing bench and removing the existing trail. Alternative E proposed to remove the rockslide and restore State Route 140 on its existing alignment. Alternative T-2 would have placed a tunnel under the Ferguson Ridge, creating an approximately 4200-foot-long tunnel. These were dropped from further consideration due to extensive impacts and/or costs associated with these Alternatives.

1.4 REGULATORY SETTING

Interpretation of existing visual character and land use was based on field visits conducted during the summer and fall of 2006. Aerial photography provided base information of existing roadways.

The National Environmental Policy Act (NEPA) of 1969, and Council on Environmental Quality (CEQ) regulations to implement NEPA, both discuss visual impacts under the heading of aesthetics. These regulations identify aesthetics as one of the elements or factors in the human environment that must be considered in determining the effects of a project. Further, Title 23, USC 109(h) cites “aesthetic values” as a matter that must be fully considered in developing a project. In addition to the federal guidelines and requirements, the State of California, through the California Environmental Quality Act (CEQA), establishes that it is the policy of the State to take actions to provide the people of the State “with ... enjoyment of aesthetic, natural, scenic, and historic environmental qualities”¹. To address CEQA requirements, Caltrans has developed the Standard Environmental Reference (SER), which provides information on the approach the Department uses to identify visual and aesthetic issues that may result from transportation projects.

This visual assessment was prepared consistent with the methodologies established by the Federal Highway Administration (FHWA) *Visual Impact Assessment for Highway Projects* (1981). This methodology divides the views into landscape or character units that have distinct but not necessarily homogenous visual character. Typical views, called Key Viewpoints, are selected for each unit to represent the views to/from the project. The view of the motorist is also considered as a separate character unit.

Existing visual quality from the viewpoints is judged by three criteria: vividness, intactness, and unity. Descriptions for the three criteria are:

¹ California Public Resources Code Section 21001(b), 2003. http://ceres.ca.gov/topic/env_law/ceqa/stat2/index.html

- **Vividness:** the memorability of the landscape components as they combine to form striking or distinctive patterns.
- **Intactness:** The integrity of visual order in the view and its freedom from visual encroachment.
- **Unity:** the visual coherence and composition of the landscape viewed to form a harmonious visual pattern.

These criteria provide a method for describing the form, line, color, and texture of the components found within a view. As in all things aesthetic, “beauty is in the eye of the beholder” and therefore, there is a subjective component to this or any visual analysis evaluation. However, as outlined in the FHWA methods, the use of these descriptors provides a basis for understanding the evaluator’s rationale behind a visual quality determination.

To address the requirements identified in the FHWA methodology, the following seven steps were performed to assess the visual impacts of the proposed project:

- Define the project setting and viewshed;
- Identify the regulatory setting of the project area;
- Identify Key Views for visual assessment;
- Analyze existing visual resources and viewer response;
- Depict the visual appearance of project Alternatives;
- Assess the visual impacts of the project Alternatives; and
- Propose methods to mitigate adverse visual impacts.

It is important to note that visual character terms are descriptive and non-evaluative, meaning that they are based on defined attributes which are neither good nor bad by themselves. Changes in visual character cannot be described as having good or bad attributes until compared with viewer responses to the change.

1.4.1 Additional Federal, State, and County Regulations

Caltrans Context Sensitive Solutions: Context Sensitive Solutions, or CSS, is a policy established by Caltrans as an “approach to plan, design, construct, maintain, and operate its transportation system.” CSS is an approach to transportation projects that places preservation

of historic, aesthetic, scenic, natural environment and other community values on an equal basis with transportation safety, mobility, economics, and maintenance. The intended result of employing CSS design on projects is to create transportation projects that are in harmony with a community's values and objectives by allowing community input into the design process.

Scenic Routes: SR-140 is a State Scenic Highway. The intent of the California Scenic Highway Program is to protect and enhance the natural scenic beauty of the highways by means of special conservation treatments. Caltrans is the agency charged with overseeing the scenic highway program, and works with local agencies to designate the scenic routes and preserve the routes special characteristics.

The program, when backed up by local ordinances, seeks to²:

- Protect the scenic corridor from encroachment of incompatible land uses such as junkyards, dumps, concrete plants, and gravel pits.
- Mitigate activities within the corridor that detract from its scenic quality by proper siting, landscaping or screening.
- Prohibit billboards and regulate on-site business signs so that they do not detract from scenic views.
- Make development more compatible with the environment and in harmony with the surroundings.
- Regulate development to prevent erosion and cause minimal alteration of existing contours and to preserve important vegetative features of the highway.
- Preserve hillsides by minimizing development on steep slopes and along ridgelines.
- Prevent the need for noise barriers (sound walls) by requiring a minimum setback for residential development adjacent to a scenic highway.

The goal of the California Scenic Highway Program is to preserve and enhance the natural beauty of the State³. Caltrans evaluates the merits of a nominated highway based on, among other things, how much natural landscape the highway traveler sees and the extent to which visual intrusions would affect these views. Visual intrusions may be natural or constructed elements that are viewed from the highway, and that adversely affect the scenic quality of the

² 2008. California Department of Transportation. Benefits of Scenic Highway Designation. http://www.dot.ca.gov/hq/LandArch/scenic/can_do.htm

³ Caltrans. 2008. *Scenic Highway Guidelines*. California Department of Transportation. Page 2

view. The process for a highway to be nominated as scenic includes preparing a brief and concise visual assessment that identifies the corridor's scenic attributes and visual intrusions as viewed from the highway. In the report, which is prepared by the local governing body, adverse effects are characterized as minor, moderate or major.

Visual intrusions are evaluated in the following manner⁴:

- The more pristine the natural landscape is and the less affected by intrusions, the more likely the nominated highway will qualify as scenic.
- Where intrusions have occurred, the less impact they have on an area's natural beauty, the more likely the nominated highway will qualify as scenic.
- The extent to which intrusions dominate views from the highway will determine the significance of their impact on the scenic corridor.

The nominating report must include a description of visual intrusions and length of the impact. Not more than one-quarter of the proposed scenic highway should be impacted by visual intrusions. So for a one mile segment, one-quarter is calculated either as ¼ of a mile impacted by continuous intrusions on one or both sides of the highway, or intrusions occurring on one or the other side of the highway totaling ¼ of a mile⁵.

The Mariposa County Zoning Ordinance designates a Scenic Highway Overlay (SHO) for areas adjacent to the highway. The ordinance limits the type, scale and proximity of development to the roadway. Signage, lighting and other elements are also restricted.

In the case of SR-140, it would be a substantial impact to the potential scenic corridor if visual intrusions were to occur along more than one-quarter of the corridors length.

Wild and Scenic River: The Merced River has been designated to be managed as a wild and scenic river by the federal government. The federal designation does not preclude development within a designated river viewshed, but the administration of the river should be managed so that

“each component of the national wild and scenic river system shall be administered in such a manner as to protect and enhance the values which caused it to be included in the said river system without ... limiting other uses that do not substantially interfere with

⁴ Caltrans. 2008. Scenic Highway Guidelines. California Department of Transportation. Page 2

⁵ Caltrans. 2008. Scenic Highway Guidelines. California Department of Transportation. Page 4

public use and enjoyment. In such administration, primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features”⁶.

Portions of the Merced River within the project area have been classified to be managed as a recreational resource. Rivers, or segments of rivers, managed for recreation activities can have parallel roads, bridges and structures, but must protect the free-flowing condition and outstandingly remarkable values of the river.

⁶ 2006. Cornell University Law School, US Code Collection, Title 16, Chapter 28 Wild and Scenic Rivers, Subsection 1281 Administration. http://www.law.cornell.edu/uscode/16/usc_sup_01_16_10_28.html

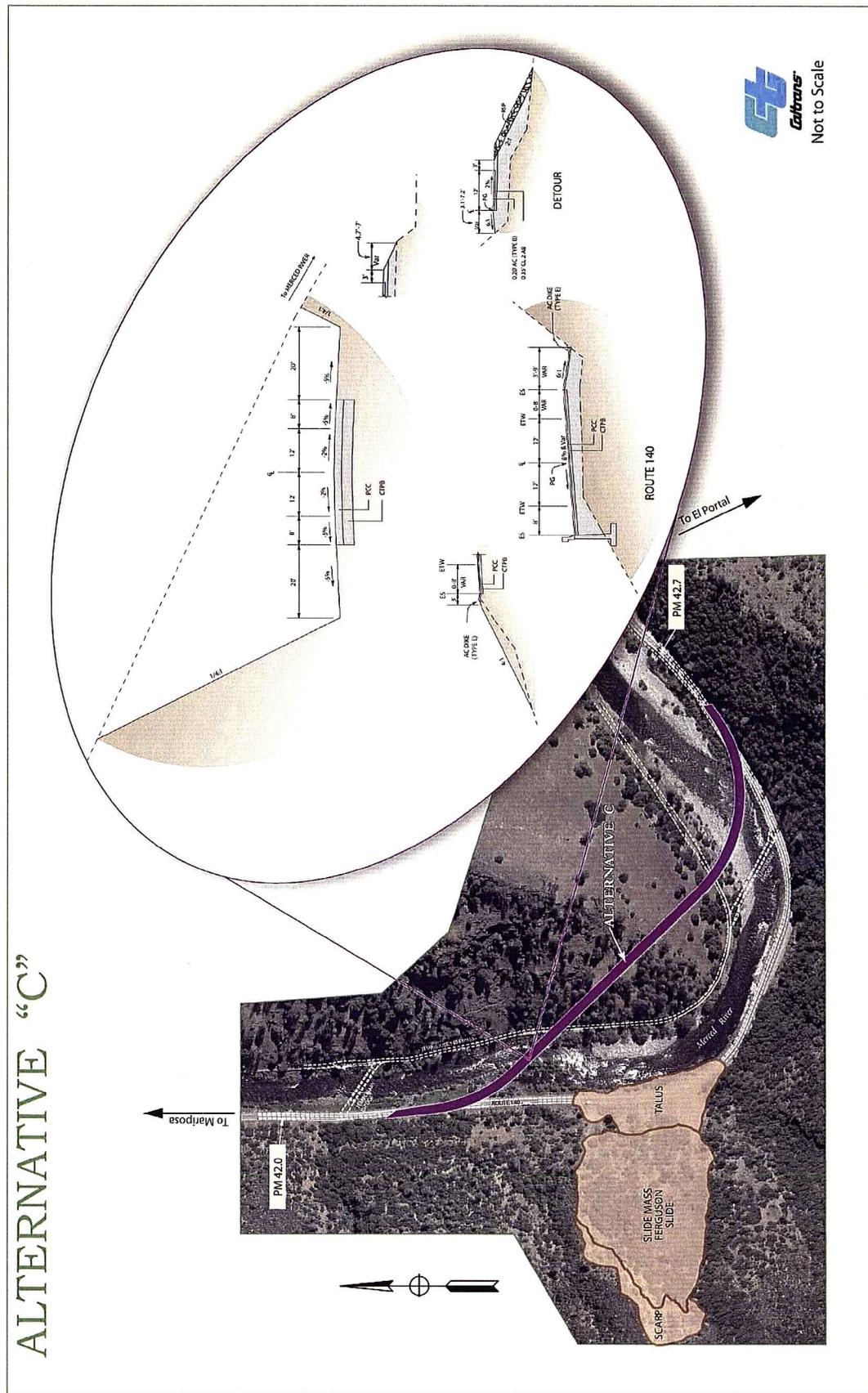


Figure 6: Alternative C' Alignment and Typical Cross-sections
Source: Caltrans

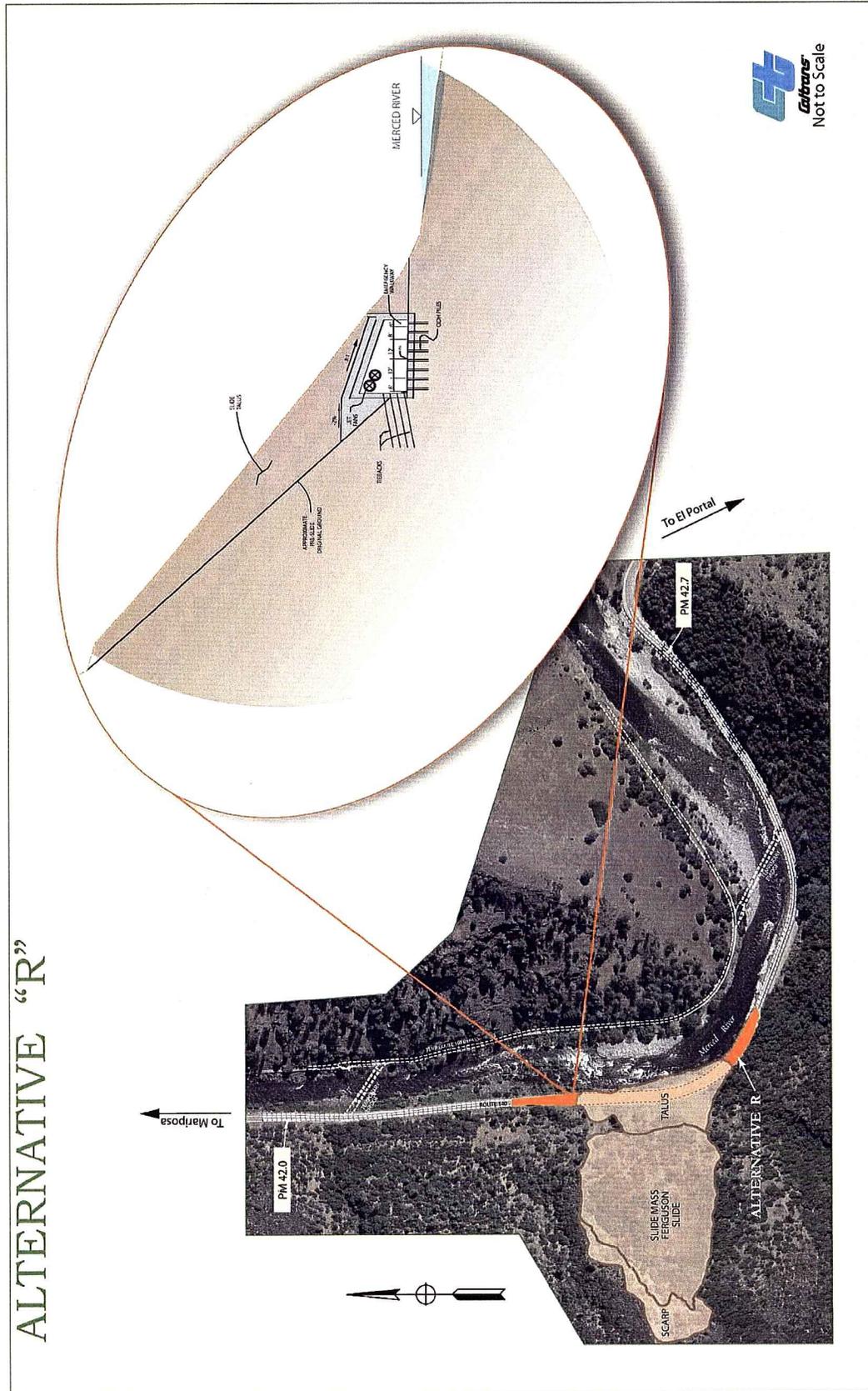


Figure 7: Alternative R' Alignment

Source: Caltrans

ALTERNATIVE "S2-V1"

This variation requires the construction of two Tied-Arch bridges.

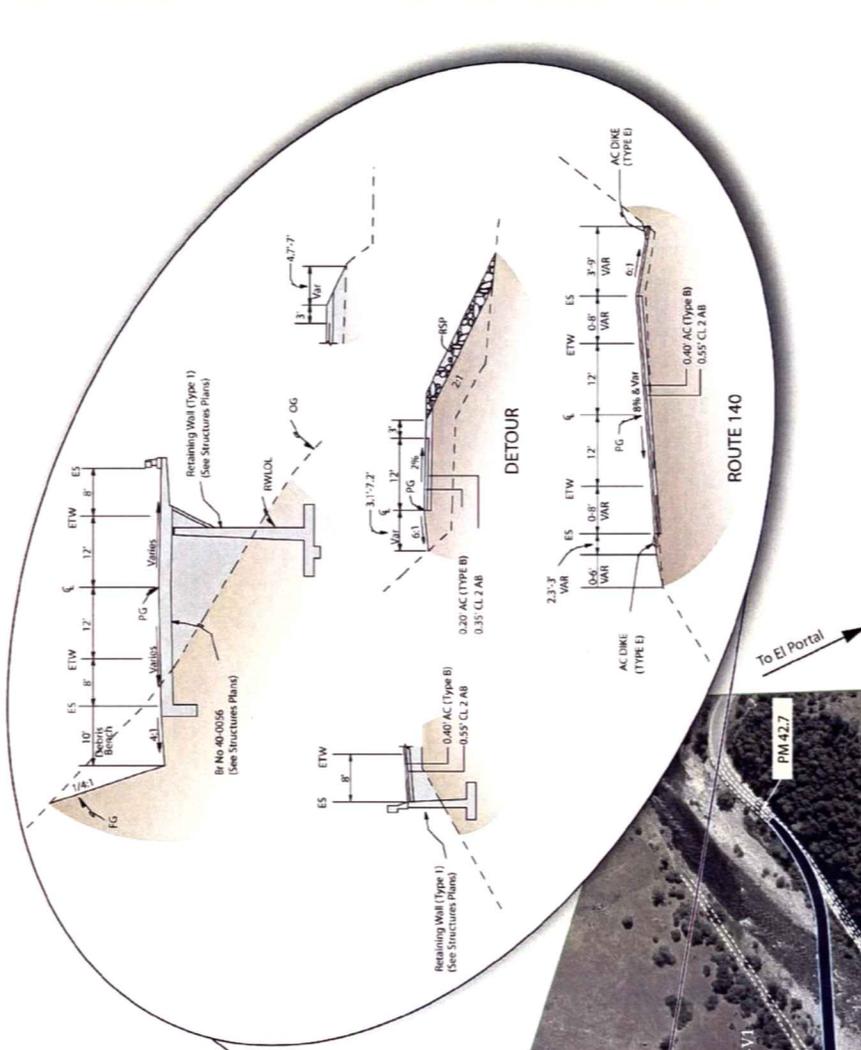
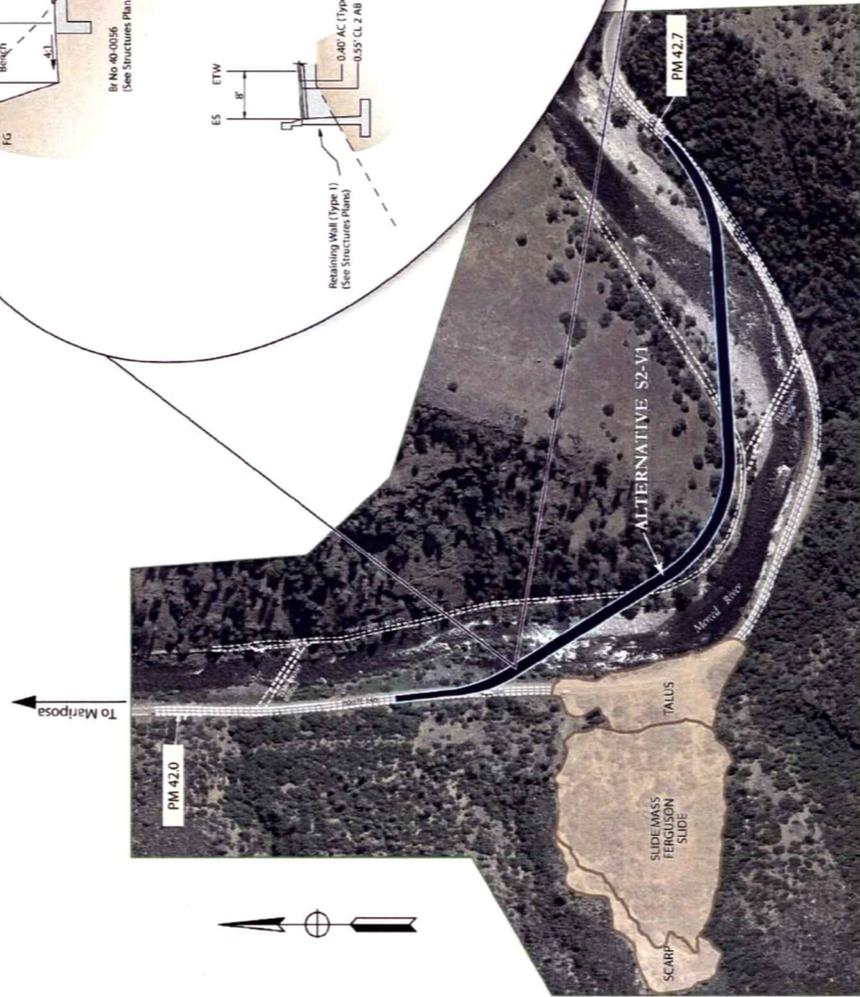


Figure 9: Alternative S2-V1' Alignment and Typical Sections for Variation 1 (Tied-arch Bridge)
Source: Caltrans

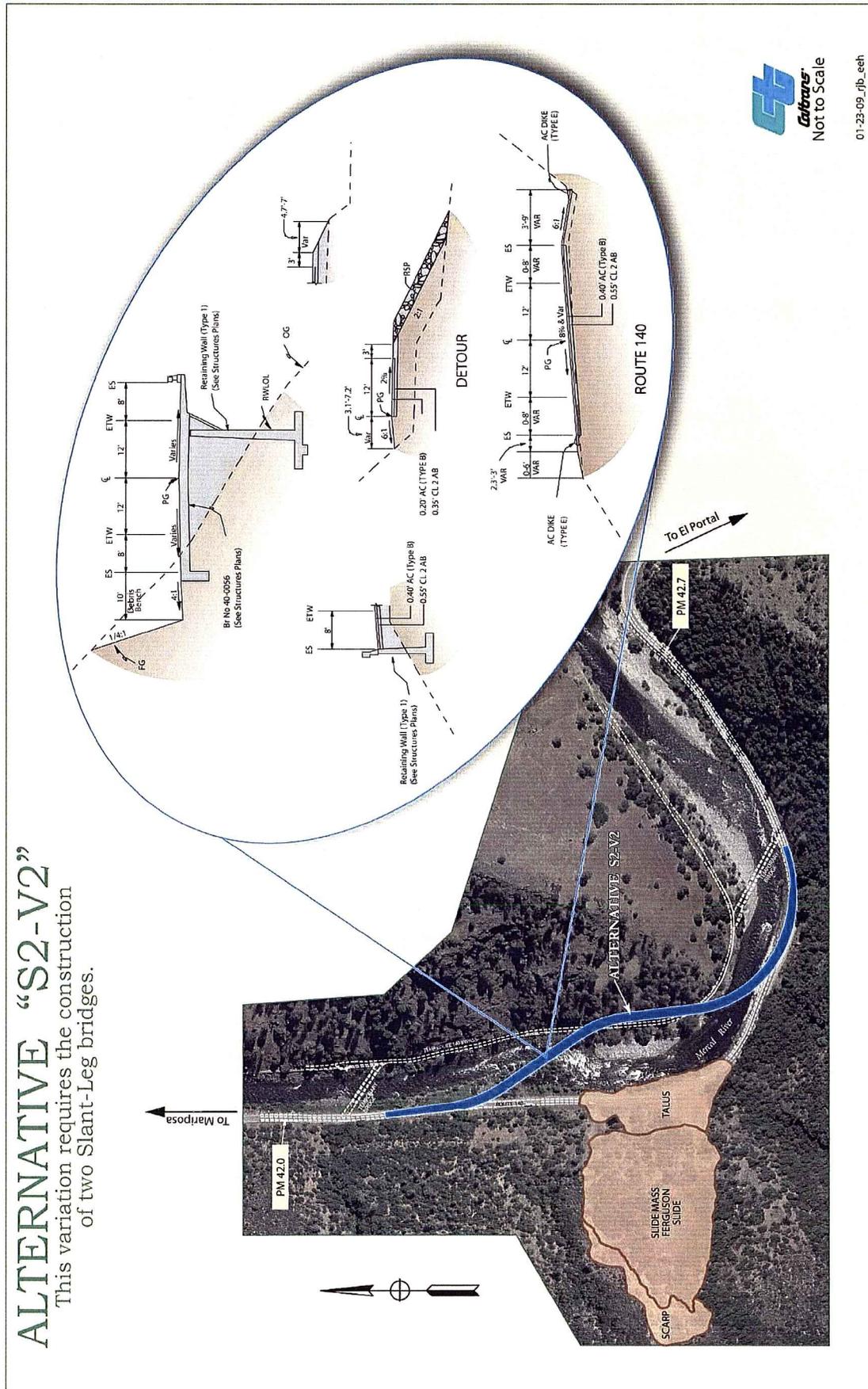


Figure 10: Alternative S2-V2' Alignment and Typical Cross-sections for Variation 2 (Slant Leg Bridge)
 Source: Caltrans

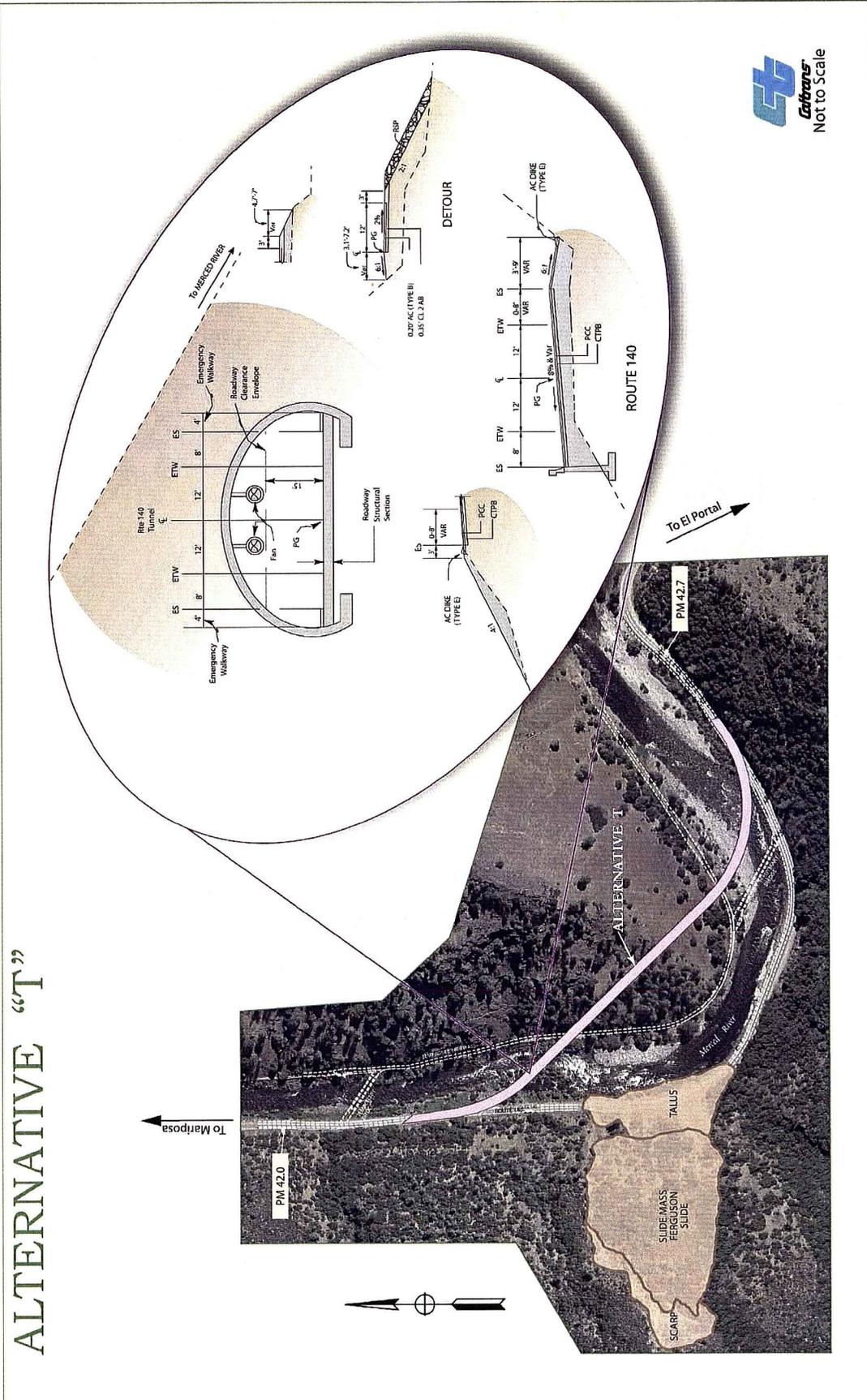


Figure 11: Alternative T Alignment and Typical Cross-sections
Source: Caltrans

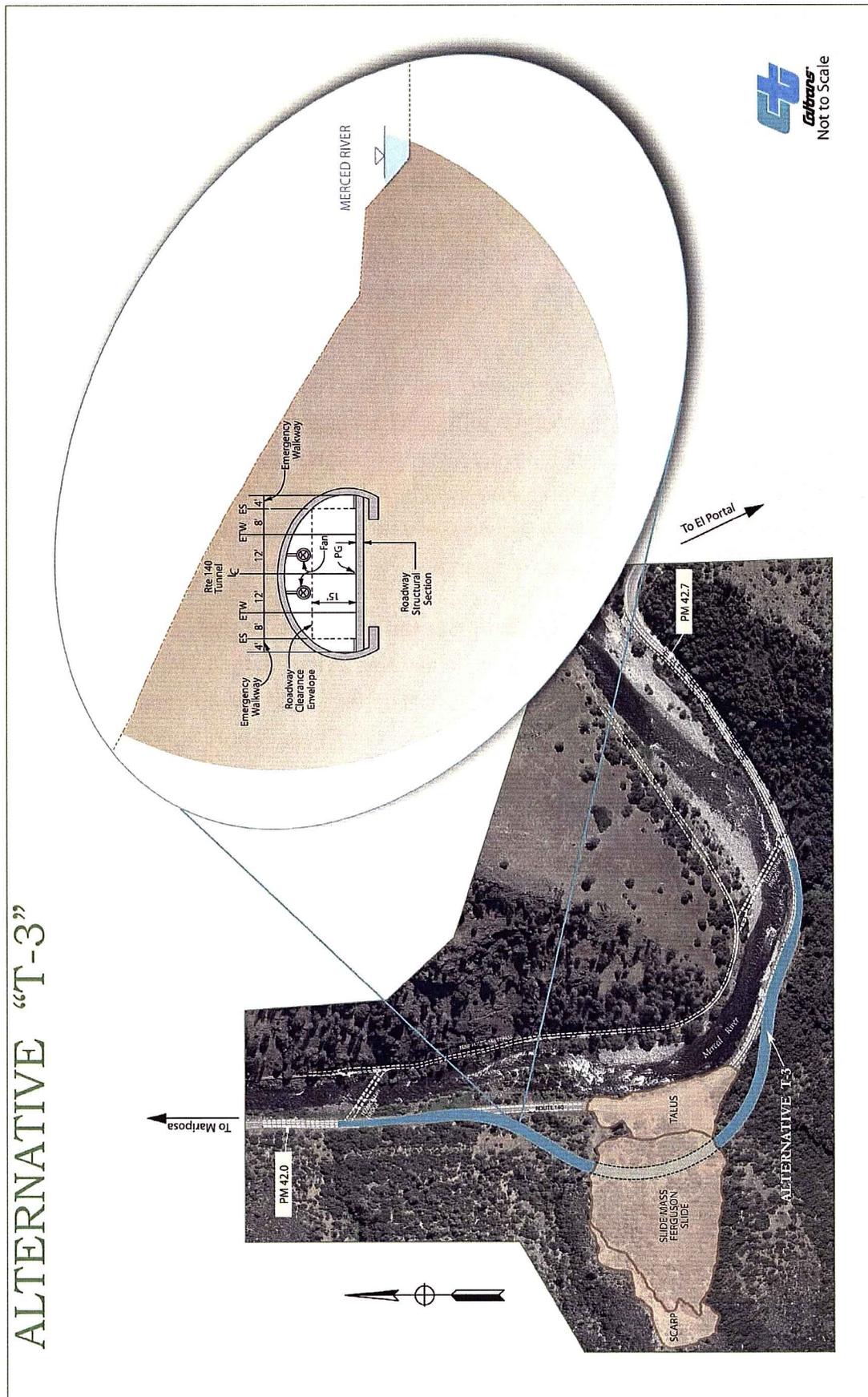


Figure 12: Alternative T-3' Alignment
Source: Caltrans

2. Affected Environment

2.1 PROJECT SETTING

A regional landscape is defined by those elements of the natural and built environment, that together, form a unique visual identity of a place or corridor. This regional landscape establishes the general visual environment of the project, but also the specific visual environment upon which this assessment is focused as determined by defining the landscape units and project viewshed.

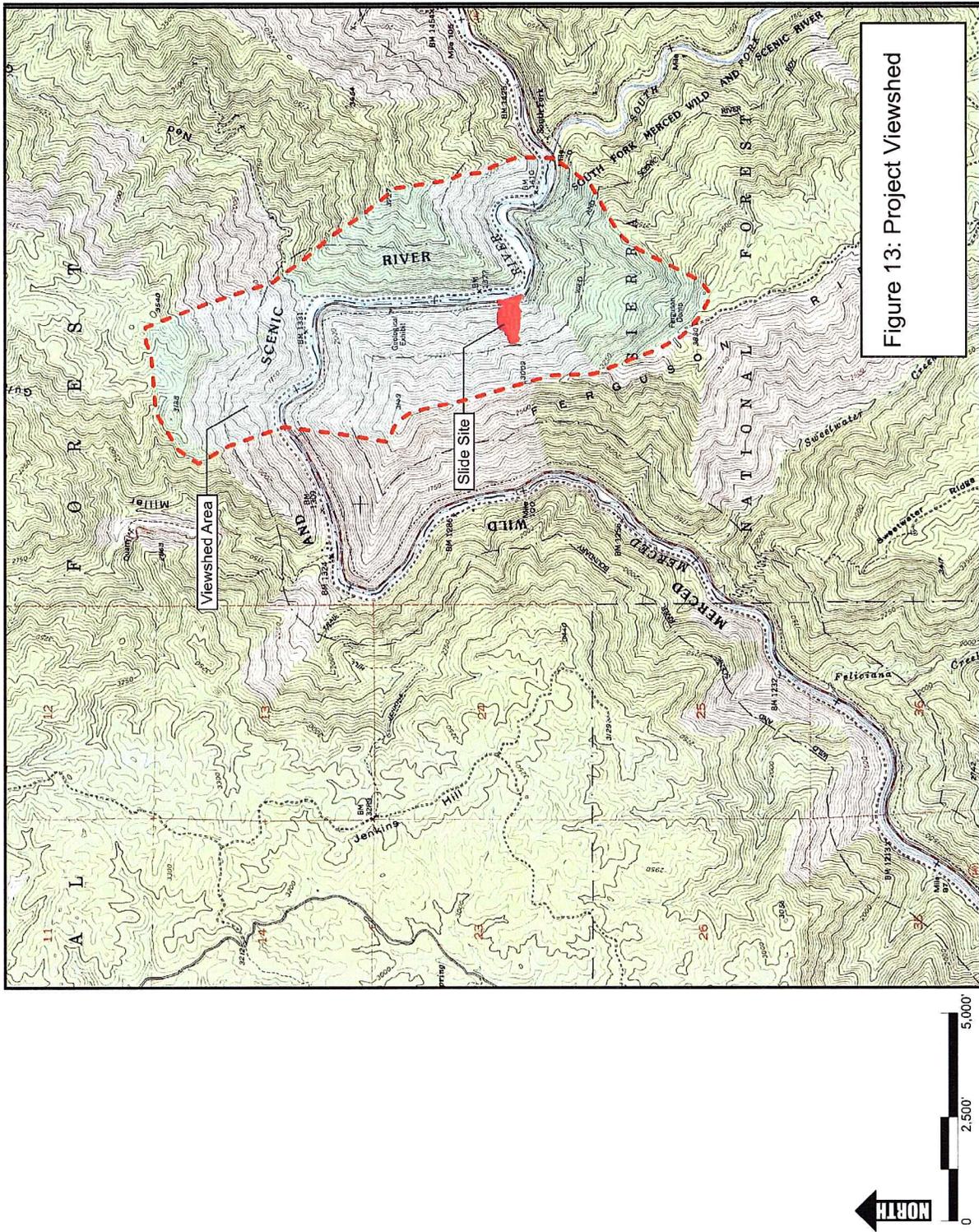
The project setting is in the western foothill area of the Sierra Nevada mountain range. The landforms are characterized by steeply rolling hills vegetated in a mixed Oak Woodland forest. This forest is made up of both juvenile and mature oak trees and pine trees. Pines generally grow on the drier south and west-facing slopes, and oak generally grows on the north and east-facing slopes. The groundplane is a mixture of low broadleaf evergreen shrubs and grasses. Rock outcroppings are also common visual elements.

The existing highway and its component parts (bridges, signs, signal, etc.) are the primary man-made elements within the project area, in addition to the Electric Transmission lines that generally parallel the river although much farther up the slope than the roadway. The road, and associated cut slopes generally parallel the Merced River. Views within the project area are limited by the topography of the area.

2.2 PROJECT VIEWSHED

A viewshed is the area normally visible from an observers viewpoint or location, including the screen effects of any vegetation or structures. Limits of a project viewshed are defined as the visual limits of the views to or from the proposed project. The viewshed includes the locations of viewers likely to be affected by visual changes brought about by the project features. The steep topography of the site somewhat limits these views to the immediate area around the slide within the river valley. The project viewshed can be seen in Figure 13 on the following page.

Figure 13: Project Viewshed



2.3 LANDSCAPE UNITS

Landscape units are defined as that portion of the regional landscape that can be thought of as containing a distinct visual character. Another way to look at a landscape unit would be to consider it an outdoor room. Frequently a landscape unit will correspond to a place or district that is commonly known among the community. Because of the relatively small area analyzed in this visual assessment, the project area as a whole is considered one landscape unit. However, within this unit there are several different user groups who experience the landscape differently. Therefore, the study area is divided by the user groups – driver/roadway travelers, Merced River Users, and hiker/trail users. The three viewer groups are described below.

2.3.1 Driver/Roadway Travelers

Roadway travelers include both eastbound and westbound traffic. A large portion of the motorists are composed of tourists, sightseers, and recreational travelers. Yosemite National Park attracts many tourists to the area. Outdoor activities in the area include camping, skiing, rafting and fishing. Prior to the slide, SR-140 was one of the primary routes to the Park, especially during the winter months due to its relatively low altitude and less inclement weather. Buses and tour companies particularly favor this route. Another component of this traffic is local residents, business owners and employees commuting to and from work, shopping, or other errands. These travelers, along with drivers of delivery and light commercial vehicles that distribute goods to local communities, make up the second group of roadway users. A third group of roadway users typically found in the area are bicyclists who ride the road for training and/or recreation. Each of these three groups experiences the views differently from the roadway to the surrounding landscape.

Tourists and sightseers generally have a high awareness of the visual resources of an area, especially if they are not familiar with the area. However, they would also be considered to be less sensitive to changes in the visual environment due to their unfamiliarity with the views. In general, they would be more focused on the cumulative sequence of views along the roadway and less on specific roadway features.

Local residents, business owners and delivery drivers who frequent the area are generally considered much more sensitive to changes in the visual environment. Because of their familiarity with the roadway and the views from the roadway, changes are more easily noticed. In addition, they also have a deeper personal investment in the local community/area and its visual quality.

Bicyclists can fall into either of these viewer groups.

2.3.2 Merced River Users

Unlike the roadway traveler, river users (including those fishing from its banks or rafting/kayaking down its waters), have a greater view of the roadway as part of the landscape. The components of the roadway, especially vertical elements above the roadway plane, can be seen by the river users as part of the surrounding landscape. River users could either be tourists to the area and unfamiliar with the views, or frequent users of the water. As with the roadway users, the more familiar a user is with the views in an area the more sensitive the viewer is to changes in the visual environment.

2.3.3 Hiker/Trail Users

Incline Road on the opposite bank of the river from SR-140, is frequently used for hiking and mountain biking. As with the other user groups, trail users may be made up of locals, tourists, or recreation users who frequent the area. The trail users familiarity with the site will influence their sensitivity to changes in the visual environment.

3. Existing Visual Resources

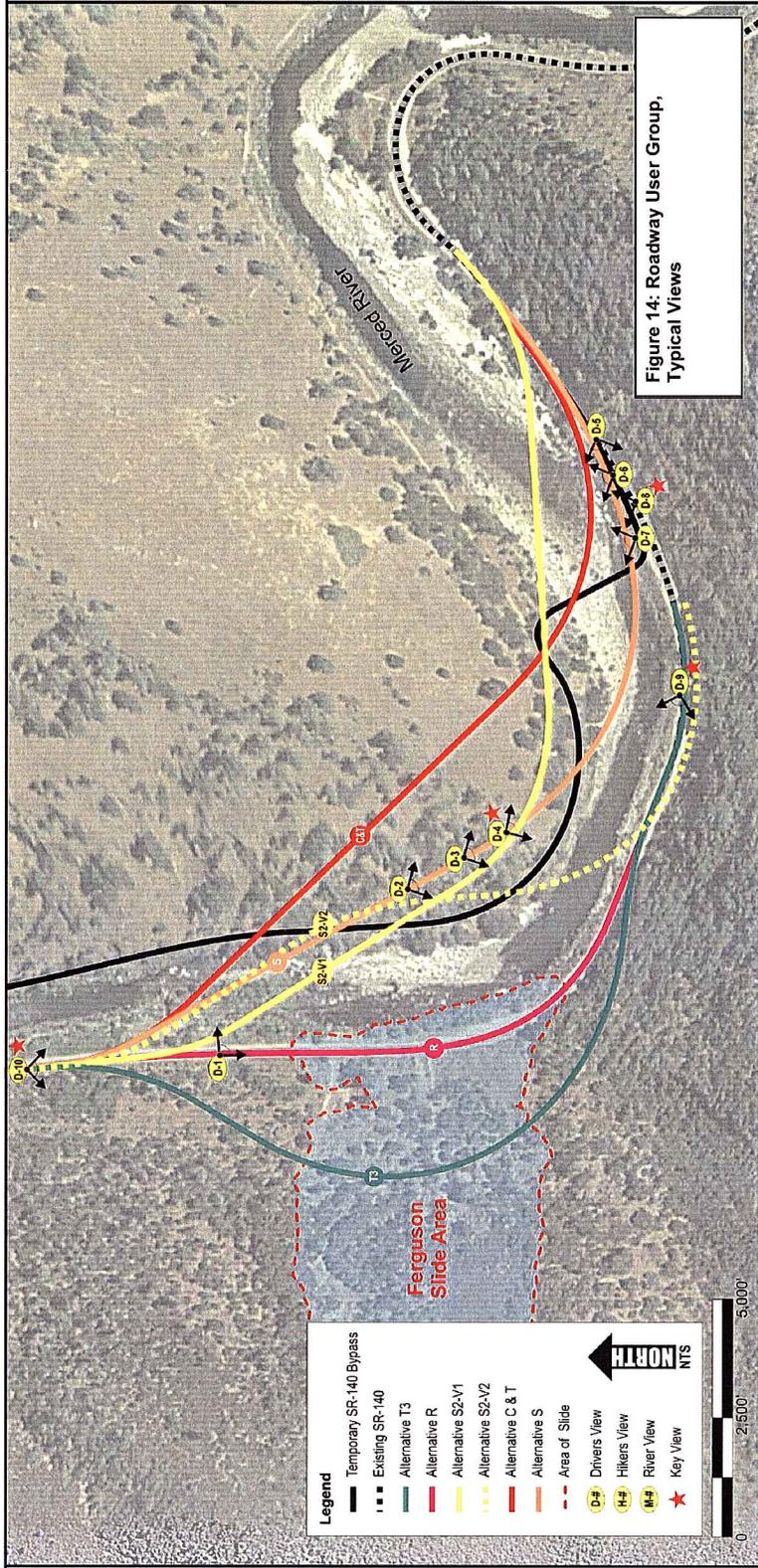
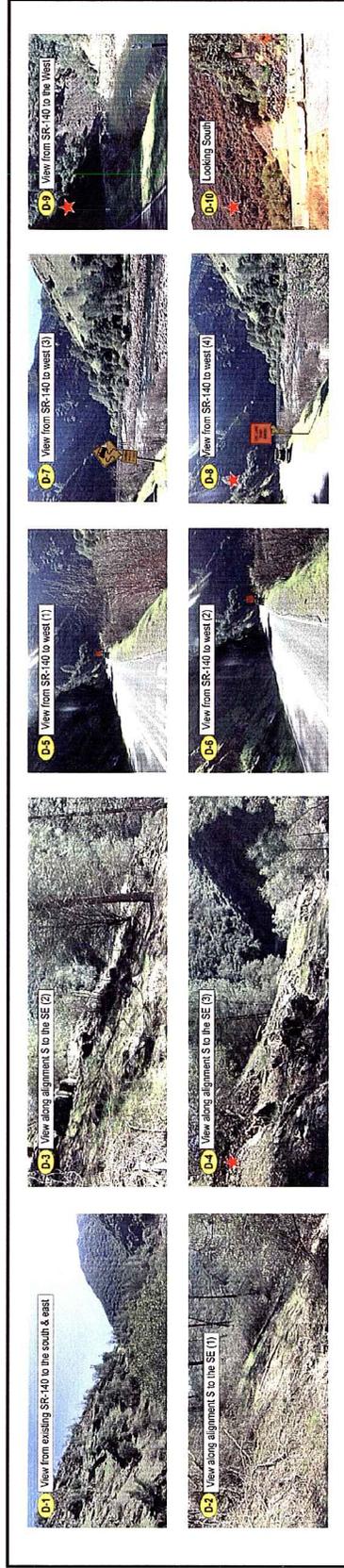
3.1 EXISTING VISUAL CHARACTER

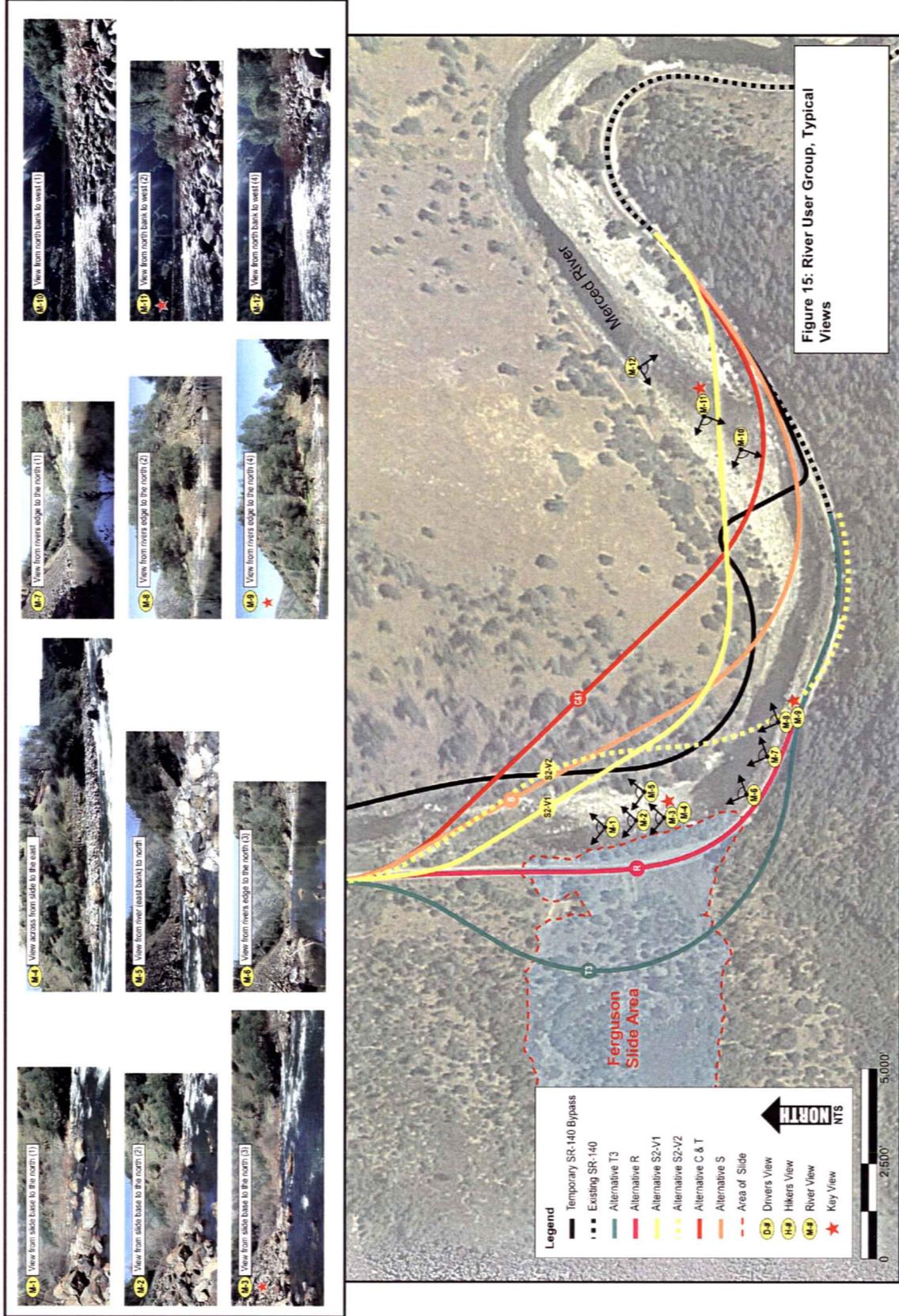
The description of the existing visual character of the corridor is divided by the user group units found within the project area. The description of each user group unit includes photographs that illustrate typical views within that unit. Key Views are identified with a star. Key Views were selected based on their ability to best demonstrate the changes associated within that unit. Changes to the visual quality/character for each Key View are discussed in Chapter 4, *Environmental Consequences*.

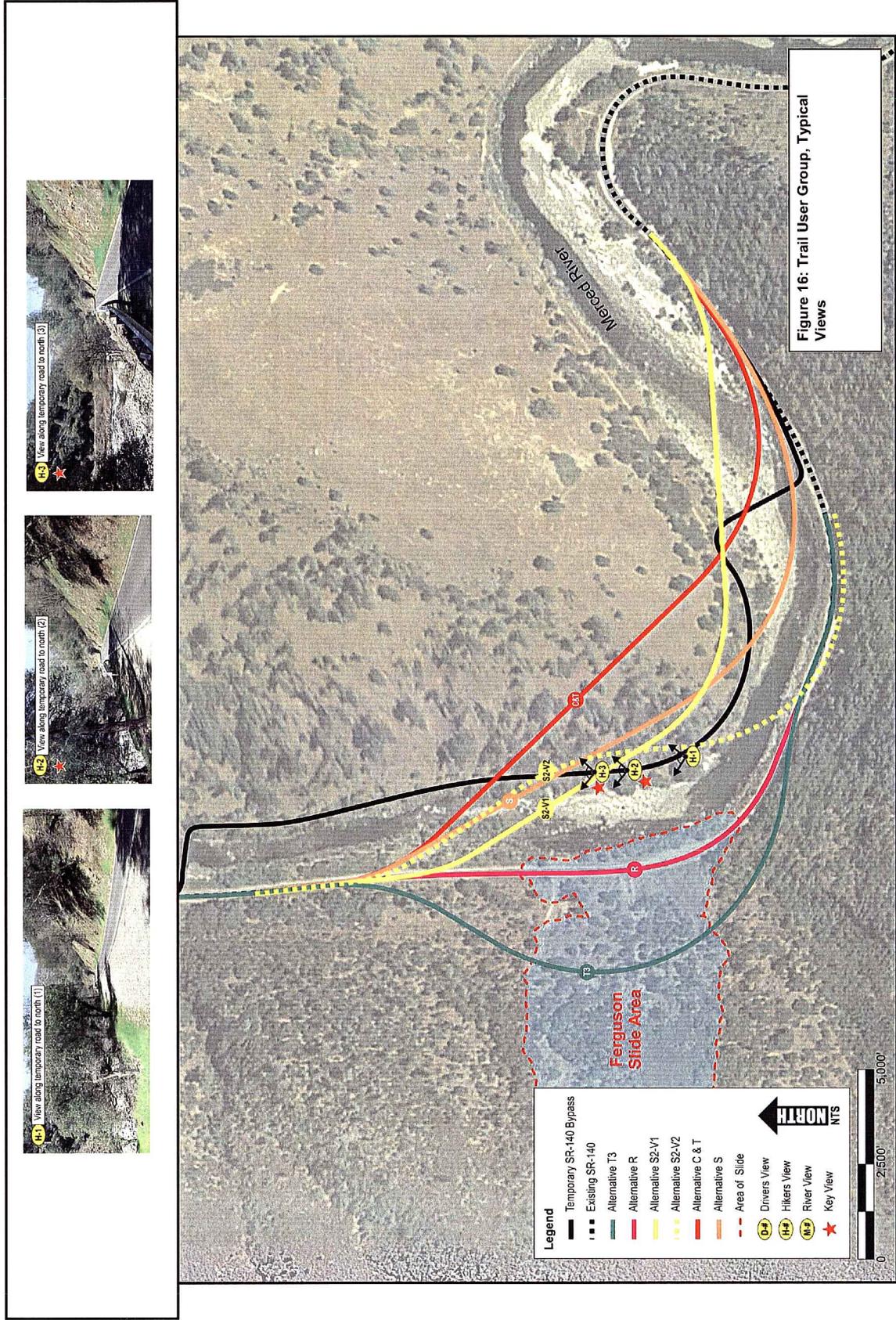
Roadway Travelers: (Figure 14): Views from the roadway traveler perspective expand to the vegetated slopes on either side of the river. The roadway is located on a bench above the river, and views are down into the river area or up into the surrounding hills. For eastbound travelers, those sitting on the passenger side of the car will have immediate views to the old cut slopes from the roadway. Most of these are vegetated, although some are solely rock cuts. These views are quickly passing, depending on the rate of travel. Views from the front of the vehicle have a longer vantage, but this is limited by the terrain of the site. Because of the steep terrain and winding nature of the river, the views from the road do not include any large vistas or overlooks. Within the project area, views are limited to the immediate slopes.

River Users (Figure 15): Views from the river user perspective are either along the river or up and out to the surrounding landscape. For users rafting or kayaking on the river, the most likely views will be along the river looking from east to west, following the river's direction of flow. Secondary views would be to the banks and up the surrounding slopes. Users along the banks would face the opposite bank with a view of the surrounding slopes. Depending on which bank was being viewed, the view would include either the SR-140 bench or the Incline Road bench.

Trail Users (Figure 16): Views from Incline Road for hikers and mountain bikers would include down into the river area, along the trail (both eastbound and westbound depending on the direction of travel), and to the surrounding slopes. Travel for these users would be at a slower speed than those on the roadway, so view times would be longer.







3.2 EXISTING VISUAL QUALITY

Visual Quality, as used in the FHWA *Visual Impact Assessment for Highway Projects* (1981) methodology, is based on the concepts of the science of aesthetics⁷ and is analogous to the federal Bureau of Land Management scenery quality rating and the U.S. Forest Service variety classes. In the methods outlined in the report, there are many factors that can contribute to a landscapes visual quality, but these can ultimately be grouped under three headings: vividness, intactness, and unity. A description of the visual quality within each User Group unit is described below:

Further refinement of this descriptive assessment technique assigns a point value between 1 and 7, with 1 being very low and 7 very high. The general existing visual quality for each category by user group unit is described below and the point values are summarized in Table 3-1:

Drivers/Roadway Travelers: The existing visual quality along the roadway is generally considered high, with vividness, and unity each rating high and intactness as moderately high. The high ratings are generally due to the aesthetic appeal of the vegetated slopes and the patterns created between the vegetation and the natural rock outcroppings and existing cut slopes. Areas specific to the rockslide have a lower intactness from the disturbed look of the slide in conjunction with the roadway terminating at the slide. The two temporary bridge crossings and guardrail along the temporary bypass also detract from the visual quality of the immediate area.

Merced River Users: From a river user's perspective, the general visual quality of the surrounding landscape is rated overall as high, with high vividness, and moderately high intactness and unity. The existing roadway, and to a less extent the Incline Road bench, with their engineered slopes and roadside elements, visually intrude on the natural appearance of the hillsides. However, the age of the slope has allowed vegetation to substantially soften the appearance of these slopes. The two temporary bridges and bypass guardrail also reduce the visual quality views from the river. Because these bridges were put in as emergency structures, they are functional, but do not visually fit with the surrounding landscape.

⁷ "Aesthetics is defined as the science or philosophy concerned with the quality or sensory experience ... It is also viewed as a body of knowledge about those characteristics of objects that make them pleasing or displeasing to the senses, and those characteristics of human perception that affect sensation. The quality of being aesthetics is not the opposite of 'practicality' or 'reality', but rather another aspect or way of experiencing the same real world phenomena. Thus, blue skies, uncontaminated water and uncluttered urban landscapes all have aesthetic value, because they imply health, pleasure and security." USDOT, 1981. United States Department of Transportation, Federal Highway Administration, Office of Environmental Policy, *Visual Impact Assessment for Highway Projects*, U.S. Department of Transportation, Washington D.C. March., page 117.

Hikers/Trail Users: Views from the Incline Road trail area also have a high visual quality, with high vividness, moderately high intactness and high unity. As with the previous two user groups, the temporary bridges and bypass guardrail are detracting elements from the existing visual quality.

Table 3-1: Summary of Existing Visual Quality By User Group

	OVERALL VIVIDNESS	GENERAL INTACTNESS	OVERALL UNITY	OVERALL VISUAL QUALITY FOR USER GROUPS (V+I+U/3)
Driver/Roadway Travelers	6.2	5.6	6.2	6.00
Merced River Users	6.4	5.6	6.4	6.13
Hiker/Trail Users	6.2	5.6	6.4	6.06

Visual ratings are between 1 and 7 with 1 equaling very low ratings and 7 equaling very high ratings.

3.3 PREDICTING VIEWER RESPONSE

Viewer response is based on two elements – viewer sensitivity and viewer exposure. These elements combine to form a method of predicting how the public might react to visual changes that result from the highway improvements.

Viewer sensitivity can be defined as concern for scenic quality and their response to change in the visual environment that creates the view. Local values and goals may place greater significance on certain landscape components or locations that might appear unremarkable to an outside observer. Viewer exposure is typically assessed by considering the number of viewers exposed to the view, the type of viewer activity associated with the view, the duration of their view, the speed at which the viewer moves through the environment, and the position of the viewer.

3.4 EXISTING VIEWER SENSITIVITY

SR-140 has been recognized for its scenic qualities by its designation as a Scenic Highway. Travelers on a scenic route would expect a higher visual quality to the view and would be especially sensitive to intrusions that did not blend with the environment.

Local residents and frequent travelers on the roadway, along the river, or on the hiking trail would be expected to be the most sensitive viewers of any changes in the visual environment due to their familiarity with the area. Tourists and infrequent travelers would be less likely to know what, if any, changes have occurred in an environment and their sensitivity level would be assumed to be less than that of the local residents.

3.5 EXISTING VIEWER EXPOSURE

The project area topography is steep with winding roads, and is a point location within a much longer corridor. The views to any improvements are, therefore, expected to be of short duration. This would tend to lessen the sensitivity and potential for impact for the viewer. Specific viewer exposure for each viewer group is discussed below:

Drivers/Roadway Travelers: Views within the project area would differ between eastbound vs. westbound traffic. Because of the curves in the river, which the roadway parallels, the views for eastbound traffic into the immediate project area are relatively brief. These views occur only after rounding the toe of the ridgeline that extends to the north from the slide area. The eastbound traveler would then be quickly upon the slide area before exiting the project area. Because of the slide location is at a westerly to northerly bend in the river, westbound travelers have a clearer view to the slide than the eastbound traveler who sees the slide only obliquely from the roadway. Depending on the Alternative and its location within the project area, roadway travelers may or may not have clear or prolonged views of the project elements.

Merced River Users: Because the river generally flows east to west direction and makes a large west to north bend right at the slide area, rafters or people floating on the river would have clear views to the slide area. However, the general flow of the river would move these viewers quickly through the project area, giving them shortened views.

Hikers/Trail Users: Like the roadway traveler, those viewers on Incline Road would have both eastbound and westbound views through the project area. Because these viewers are across the river from the slide area and, if on foot, they tend to travel at a slower rate. Their views would be for longer periods of time to any of the changes in the project area.

4. Environmental Consequences

4.1 ASSESSING PROJECT IMPACTS

The visual impact of project Alternatives is determined by assessing the visual resource change due to the project and predicting viewer response to that change. Visual resource change is the total change in visual character and visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the existing visual character of the landscape. The second step is to compare the visual quality of the existing resources with the projected visual quality after the project is constructed. Viewer response to the changes is the sum of viewer exposure and viewer sensitivity to the project as described in Chapter 3. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to oppose the change.

The National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) require considering visual resource impacts of projects when preparing environmental documents. NEPA guidelines⁸ for the assessment of visual impacts stipulate that environmental documents:

- State whether the project Alternatives have a potential for visual quality impacts;
- Identify the impacts to the existing visual resources;
- Identify the relationship of the impacts to potential viewers of and from the project; and
- Identify measures to avoid, minimize, or reduce the adverse impacts.

The CEQA guidelines, Appendix G (as amended July 11, 2006), state that a project may have a significant impact on visual quality if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or

⁸ USDOT, 1987. United States Department of Transportation, Federal Highway Administration, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, Technical Advisory T6640.8A, October.

- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

For projects that do not create a substantial impact on existing visual quality, a more nuanced approach categorizes impact levels as low, moderate, moderately high, and high based on the following descriptions⁹:

- **Low:** Minor adverse change to the existing visual resource, with low viewer sensitivity to any change.
- **Moderate:** Adverse change cannot be described as minor or viewer response is thought to be greater.
- **Moderately High:** Moderate adverse change in the visual resource with high viewer response or high adverse change with a moderate viewer response.
- **High/Substantial:** High level of adverse change or a high level of sensitivity to the change such that architectural design and landscape treatments cannot mitigate impacts.

To prevent confusion between the analysis of the impacts of the project with the terms used to describe the overall visual quality, vividness, intactness and unity, which are also described by the same low, moderate and high terms, this report will use the terms:

- **Little Notice** for low to moderately low changes in the visual environment
- **Noticeable** for change moderate changes in the visual environment
- **Very Noticeable** for changes in the visual environment that are moderately high to high

4.2 ASSESSMENT OF IMPACTS PER ALTERNATIVE

The following subsections include a discussion of the impacts anticipated to the visual environment that are common to most or all of the Alternatives and a discussion for each user group by Alternative. At the end of the discussion for each Alternative, a table is provided that summarizes the anticipated general effects to the existing visual quality of the project area. It is important to note that this a description of general impacts by user group. Impacts to specific views within the project area are described in Subsection 4.3, *Analysis of Key Views*.

⁹ Caltrans, 2006. Standard Environmental Reference, Environmental Handbook, Volume 1: Guidance for Compliance, Chapter 27: Sample Assessments, I-15 Managed Lanes.

4.2.1 Impacts Associated with All Alternatives

The proposed roadway paved surface of all Alternatives would be wider than the existing SR-140 roadway. The new roadway cross-section would be 40-feet wide with two 12-foot lanes and two 8-foot shoulders. In addition, some Alternatives include rockfall benches (Alternatives with large cut slopes) and/or emergency pedestrian walkways (tunnel and rock shed Alternatives) which would widen the visual cross-section, although rockfall benches would not be paved. Specific changes to the proposed standard width are discussed under each Alternative where appropriate.

New bridges over the Merced River are common to most Alternatives (the exceptions being Alternatives R and T-3), with specific locations and heights of the bridges differing depending on their locations. All bridge alternatives have columns placed in or alongside the river channel. These are located out of the center of the channel, unlike the existing eastern temporary bridge has a center column located in the river water channel.

Other items common to each of the Build Alternatives is the temporary extension of the existing bypass on Incline Road. The temporary roadway would be raised five feet. The effect of this would be the removal of some vegetation along the bypass alignment. The fill slopes would be removed at the end of the project and the hillside and river banks would be restored.

4.2.2 Build Alternative C – Open Cut Realignment

The alignment would add bridge structures across the Merced River to the hillside opposite the current road alignment. This Alternative would include a large cut slope created on the uphill side with a smaller cut slope on the downhill side, removing much of the existing vegetation on the hillside above the river and hiking trail. The anticipated uphill cut slope is expected to be approximately 400 feet long and range in height from approximately no cut at the tie-in points with the bridges to 130 feet at its highest point. The roadway prism would be much larger than the current roadway with a 20-foot wide bench in the area of the uphill cut slope and a 10-foot bench on the downhill cut slope to catch rockfall.

Specific changes to the visual environment for the user group units are discussed below. The table at the end of the section summarizes the general proposed visual quality by user group for the Open Cut Realignment Alternative.

Driver/Roadway Travelers: From a roadway traveler's perspective, the road would sit higher in the landscape affording views farther into the distance than what is current along the existing alignment or along the existing temporary bypass. Crossing the river, the views would include views along the river course would be included, which are currently not available to motorists.

The large cut slope between the two bridges would add an engineered look to the landscape that is currently not seen in the existing, old and revegetated slopes along SR-140. Because the new slope is facing south and much steeper than the current hillside, it is likely that establishing woody vegetation would be difficult, leaving the slope primarily dominated by grasses and forbs which would not substantially soften the engineered appearance of the slope. The extent of the cut slope would be most visible from a distance and when approaching this section of the roadway. Once alongside the slope, the full height of the slope would be outside of the typical drivers viewshed; although the drivers distance from the slope that is created by the 20-foot rockfall benches increases the amount of visible slope.

In addition to the cut, the new roadway with its wider shoulders and rockfall benches would be a substantial departure from the existing roadway section. The current roadway has much narrower shoulders, in the two- to three-foot range, with wider “pull-out” areas spaced along the road depending on the topography of the immediate area. The consistent width would give an engineered appearance to this portion of the roadway and would reinforce the engineered look of the cut slope.

The effect of the new roadway elements, particularly the cut slope, would be to reduce the overall visual quality of the roadway in the immediate area from high to moderate, with moderately high vividness, moderate intactness, and moderate unity. The vistas that the new alignment might add to the current views could increase the overall vividness, while the engineered slope and engineered roadway prism would detract. The replacement of the two temporary bridges with bridges better designed and sited to the landscape would also help to increase the intactness and unity of the project area.

Merced River Users: For rafters and people along the banks of the river, the new bridges would be the most notable elements. The bridges would replace the existing temporary bridges, so as an element would not be new. However the new bridges would be larger and higher than the existing bridge, which would help to open up the views along the river. The new bridges, with mitigation in the form of bridge architecture that suits the environment, would appear to better fit the project area than the existing temporary structures. From some vantage points, only the top of the cut slope would be visible to those on or along the river, while at other points the full effect of the slope and its engineered appearance in the landscape would be fully visible. As with the motorists’ views, the cut slope would impose an engineered appearance into the landscape that would be incongruous with the natural hillsides.

The effect of this Alternative for river users would be to lower the existing high overall visual quality of the area to moderately high, with a high vividness, and moderate intactness, and moderately high unity ratings. In replacing the temporary bridges with taller structures, the views along the river for rafters would be more open as they passed underneath the bridge. Depending on the viewer’s location on the river, the cut slope could be a minor to large

imposition on the view and would have a corresponding effect on the visual quality from minor to substantial.

Hiker/Trail Users: The removal of the temporary bypass would allow trail users back on this portion of Incline Road. For trail users, the most notable visual difference would be where the new bridges cross over the trail. It is likely that the abutment walls would also be visible to those on the trail. It is not likely that trail users would be able to see much of the cut slope from their vantage point, since they are down at the base of the slope.

The overall visual quality of the area for trail users is expected to drop to a moderately high rating from its initial high rating, with moderately high vividness and unity and moderate intactness. Areas immediately at the bridges would have a lower visual quality since both the bridges overhead and the abutment walls would block some views. But this would be point-specific to these two areas and would affect only the views at these points. Views from other areas along the trail should retain the same visual quality and those areas where the temporary bridges are removed should increase in visual quality.

Table 4-1: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative C – Open Cut Realignment

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	5.3	5.6	3.75	6.2	3.75	6.00	4.33
Merced River Users	6.4	5.75	5.6	4.3	6.4	4.75	6.13	4.93
Hiker/Trail Users	6.2	5.75	5.6	4.3	6.4	4.75	6.06	4.93

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.3 Build Alternative R – Rock Shed Alternative

The Rock Shed Alternative would create a new structure along the base of the existing rockslide. This Alternative would keep the roadway on the existing alignment along the west side of the canyon. The structure is basically a cut-and-cover tunnel. Enough of the rock at the

base of the slide would be removed to allow for construction, and then would be replaced along the uphill wall and the top of the shed to protect it from future rockslides.

The new roadway would have the same 40-foot width as the other Alternatives plus an additional 4-foot emergency walkway in the shed for a total width of 44 feet. In addition to the walls of the shed, retaining walls would be visible on the uphill side of both the approach and exit points for the shed. The downhill side of the shed along the river would be exposed, which adds a visual encroaching element to both the river and trail users. The exposed height of the wall along the river is anticipated to be approximately 15 to 20 feet. Some rock currently at the base could be replaced after construction to reduce the perceived height of the wall, but this would be limited to allow for the free flow of the river. One consideration with wall placement is that the new wall provides the opportunity for graffiti/tagging where there currently are no opportunities. However, the expectation for graffiti is low due to the sites rural location. Furthermore, graffiti can also be deterred through the use of heavy textures on the walls, screening vegetation, and anti-graffiti coatings/stains. The possibility of this vandalism, along with possible mitigation measures should be considered in the design of this structure.

The two temporary bridges over the Merced River would be removed under this Alternative as would the existing guard rail and paved temporary bypass. These encroachments into the existing landscape would be removed, but the exposed side of the new rock shed would add a new encroaching element.

The discussion below identifies anticipated changes to each of the user groups from Alternative R. Table 4.2 at the end of this section summarizes the potential effects to the general visual environment of the project area by the Alternative.

Driver/Roadway Travelers: For the roadway traveler, the tunnel created by the rock shed would be a new element in the landscape. Views within the area of the tunnel would be blocked, eliminating views to the surrounding landscape. The anticipated tunnel length is 760 feet long. In addition to the walls of the rock shed, the retaining walls on the uphill side of the roadway at both ends of the tunnel would also be new visible elements.

The addition of the new walls plus the blocking of views in the immediate area of the rock shed would decrease the overall visual quality of the area from high to moderate with moderate vividness, moderately low intactness, and moderate unity.

Merced River Users: Rafters on the river would be traveling westward with the flow of the river and would turn north with the river at approximately the point of the rock shed. This would give these users clear and unobstructed views of the side wall of the rock shed, which would have a large visual presence along the edge of the river. The removal of the temporary

bridges and other elements associated with the bypass would improve views along this stretch of the river.

The imposition of the wall along the river is anticipated to reduce the overall visual quality of the landscape for the river users from high to moderately low with moderate vividness and moderately low intactness and unity. Given the direction of the river flow, viewers on the river would have an unobstructed view of the new wall of the rock shed which decreases the visual quality, while the removal of the temporary bypass bridges and elements would cause an increase. However, it is not anticipated that the removals would off-set the addition of the wall.

Hikers/Trail Users: The construction of this Alternative would allow this user group back on to the trail area. For these viewers, the exposed downhill wall of the rock shed along the river would be very noticeable in the landscape. The existing trees along portions of the trail would help to partially obscure these views, but the wall would still be visually prominent.

The presence of the long wall of the rock shed along the river would likely reduce the overall visual quality of the area for the trail users, decreasing the overall visual quality to moderately low with moderate vividness and moderately low intactness and unity.

Table 4-2: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative R – Rock Shed Alternative

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	3.9	5.6	3.2	6.2	4.0	6.00	3.70
Merced River Users	6.4	3.75	5.6	2.6	6.4	2.8	6.13	3.05
Hiker/Trail Users	6.2	4.0	5.6	2.7	6.4	2.9	6.06	3.20

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.4 Build Alternative S – Viaduct Realignment

The roadway in the viaduct realignment Alternative is sit lower on the hillside than in the C or T Alternatives, but higher than the temporary bypass. The bridges would be longer than these Alternatives C and T, given the skew of the roadway. This siting would still open up views

along the river that are currently not available to roadway travelers, but these views would likely not be as far into the distance as would be expected from the taller bridges in the other Alternatives.

The portion of the new roadway on the hillside between the two bridges, the viaduct portion of the alignment, would be cantilevered over a retaining wall and would be approximately 360 feet in length. Cantilevering the roadway through this portion allows the roadway to shift out from the hillside slope and, therefore, reduces the required cut slope to the hillside. The roadway prism for that portion of the viaduct along the hillside would have a 10-foot debris bench. The anticipated maximum height of the cut slope is approximately 25 feet.

The retaining wall along the cantilevered section of roadway would add a new element to the existing visual environment, which would be visible to both the river and trail users. Considerations for mitigation of the wall are similar to those discussed under Alternative R. Specific changes to the visual environment for each user group unit are discussed below and Table 4.3 at the end of this section summarizes the effects to the general visual environment of the project area.

Driver/Roadway Travelers: From a roadway traveler's perspective, the road sits higher in the landscape than the existing alignment or the temporary bypass, affording views farther into the distance along the river. Crossing the river, the views would include portion of the river channel that are currently not available to motorists.

The roadway portion between the two bridges would include a small cut slope along the hillside (up to 15 to 20 feet), which would add an engineered look to the landscape that is currently not seen in the existing, old and revegetated slopes along SR-140. The full height of the cut slope would be most noticeable at a distance or when approaching the cut slope section of the roadway. Once alongside the cut, the height of the slope would be somewhat less noticeable with only the base of the cut in view. Because the new slope is facing south and steeper than the current hillside, it is likely that establishing woody vegetation would be difficult, leaving the slope primarily dominated by grasses and forbs, which would not substantially soften the engineered appearance of the slope. However, this slope would be substantially smaller than the slope proposed in the Open-Cut Alternative (Alternative C).

The effect of the new roadway elements, particularly the new slope, would be to reduce the overall visual quality of the roadway in the immediate area from high to moderately high, with moderately high vividness, moderate intactness, and moderately high unity. The vistas that the new alignment might add to the current views could increase the overall vividness, while the engineered slope and engineered roadway prism would detract. Replacing the two temporary bridges with bridges better designed and sited to the landscape of the area would also help to increase the intactness and unity of the project area.

Merced River Users: For rafters and people along the banks of the river, both the new bridges and the cantilevered roadway section would be notable elements in the landscape. The bridges would replace the existing temporary bridges, and therefore, would not be a new visual element. However, the new bridges would be larger and higher than the existing. The views would still be more open than with the existing temporary bridge, but the length of the new bridges would be visible for longer viewing periods. The new bridges, with mitigation in the form of aesthetic treatments and context sensitive design applications, would appear to better suit the project area than the existing temporary bridges.

The cantilevered roadway section would add another structural element to the landscape in addition to the bridges. The wall would be visible to all river users in the area, and above the wall the cut slope would also be visible. The placement of the wall would add a new visual element into the landscape that is currently not present. However, this wall is likely to be less of an intrusion than the wall of the Rock Shed Alternative (Alternative R) because it is not located directly in the view of users rafting down the river. This wall is on the opposite bank of the river and although noticeable, should be less obtrusive. It may be possible to mitigate some of the walls impact by reducing the visible height of the wall through preservation of the grades, natural rock formations, and vegetation in front of the wall.

This Alternative for river users would decrease the existing high overall visual quality of the area to moderate, with a moderately high vividness, moderate intactness, and moderate unity ratings. Replacing the temporary bridges with taller structures, the views along the river for rafters would be more open as they passed underneath the bridge. The new retaining wall would also lower the overall visual quality, although mitigation techniques can be used to decrease this impact.

Hiker/Trail Users: The removal of the temporary bypass would allow trail users back on this portion of Incline Road. For trail users, the most notable visual difference would be (a) where the new bridges cross over the trail and (b) the viaduct portion of the roadway with its retaining wall paralleling Incline Road. It is not likely that trail users would be able to see much of the engineered cut slope from their vantage point, since they are down at the base of the slope. The retaining wall would be prominent to the trail users, although mitigation in the form of plantings at the base of the wall could lessen the visual impact.

The overall visual quality of the area for trail users is expected to drop to a moderate rating from its initial high rating, with moderately high vividness and moderate intactness and unity. Areas immediately at the bridges and along the wall would have a lower visual quality since the bridges above, the abutment walls, as well as the cantilevered section would block some views.

Table 4-3: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative S – Viaduct Realignment

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	5.4	5.6	4.3	6.2	4.25	6.00	4.65
Merced River Users	6.4	4.75	5.6	4.2	6.4	4.2	6.13	4.38
Hiker/Trail Users	6.2	4.75	5.6	4.1	6.4	4.1	6.06	4.32

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.5 Build Alternative S2-V1 – Viaduct Realignment w/ Tied-Arch Bridge Variation

This Alternative has many of the same visual impacts identified under Alternative S, including the replacement of the two temporary bridges with two new bridges over the Merced River, and the inclusion of a viaduct section between the two bridges. However, Alternative S2-V1 has a slightly altered alignment from the S alignment. This alignment has the bridges at a greater skew, which translates into longer bridge spans than in Alternative S. The skew allows the bridges to be in a tangent section which allows for different bridge types to be considered.

In Alternative S, the bridges would be concrete girder-type structures, typically concrete box girders or concrete I girders. Alternative S2-V1 proposes to use an alternate tied-arch bridge structure type. Given that many of the existing bridges along other portions of SR-140 were developed in the 1930s and 1940s, the design of a tied-arch bridge appears to better fit within the existing environment than a smooth concrete structure. The anticipated height of either the arch or truss structure is anticipated to be 110 feet and 130 feet above the bridge deck for the two bridges. The use of this type of bridge architecture would be anticipated to enhance the overall aesthetics of the project area with its historic image and scale in the landscape. This alternative would also have all bridge elements out of the Ordinary Highwater Mark for the Merced River.

Between the two bridges, a viaduct section would be cantilevered over a retaining wall, similar to Alternative S. However in this Alternative, the viaduct section would be 510 feet instead of 360 feet. Impacts from the viaduct should be similar to those described under Alternative S.

The discussion below identifies the changes to the visual environment with this Alternative for each user group. Table 4-4 at the end of the section summarizes the anticipated general impacts to the visual quality of the project area by this Build Alternative.

Driver/Roadway Travelers: Users on the roadway would very likely notice the new bridge designs due to the height of the structures in the landscape. These would be dramatic elements in the landscape and would be noticeable from a distance. While the structures will be tall, they would also have a lighter visual presence because the bulk of concrete girder is not required to support the deck, allowing for a thinner appearance of the deck, which is supported by the cable or truss elements. The proposed structure type also has more historical context, which may be interpreted as better suited to the landscape than bulkier concrete structures by the observing user groups.

Along the viaduct section, the impacts should be the same as those discussed under Alternative S, except that this viaduct structure would be longer by approximately 150 feet, which would have the effect of extending the impacts over a longer distance.

For the roadway traveler, this Alternative is anticipated to maintain the existing high overall visual quality of the area. The proposed bridges would provide a dramatic counterpoint to the natural landscapes present in the project area. The bridges would be visually lighter, provide a more historic context, and should be less intrusive to the landscape. The viaduct section would add a new element with its supporting retaining wall, which is likely to be an encroachment into the view.

Overall visual quality would remain high, with high vividness and moderately high intactness and unity. It is anticipated that this Alternative would only slightly lower the overall visual quality ratings of the area for this user group; however they will still fall within the same categories.

Merced River Users: For the Merced River User Group, as with the Roadway Users, the bridges would introduce a new dramatic element in the landscape, which presence would likely maintain the existing high visual quality of the area. The viaduct portion of the alignment would be a similar impact as that described in Alternative S.

For the river user, it is anticipated that the overall visual quality may be reduced slightly due to the presence of the wall and viaduct, but would still fall within the moderately high to high range. It is anticipated that the bridges would be more of a focal element in the landscape for the

river users and would draw the viewer’s attention away from the viaduct section. The vividness should remain high, with both intactness and unity rated at moderately high.

Hiker/Trail Users: For the trail user, the impacts are similar to those described under Alternative S. However, in the S2-V1 Alternative, the tied-arch bridge design provides a better context with the environment. It is anticipated that under this Alternative, the overall visual quality would drop to moderately high, with high vividness, moderately high intactness and moderate unity.

Table 4-4: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative S2-V1 – Viaduct Realignment w/ Tied-Arch Bridge

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	6.0	5.6	5.4	6.2	6.0	6.00	5.80
Merced River Users	6.4	6.0	5.6	5.4	6.4	5.4	6.13	5.60
Hiker/Trail Users	6.2	6.0	5.6	5.4	6.4	5.0	6.06	5.47

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.6 Build Alternative S2-V2 – Viaduct Realignment w/ Slant Leg Bridge Variation

This Alternative has many of the same visual impacts identified under the previous two S Alternatives, including the replacement of the two temporary bridges with two new bridges over the Merced River, and the inclusion of a viaduct section between the two bridges. However, Alternative S2-V2 has a slightly altered alignment and a different bridge design.

Within the Ferguson Slide Project area, the design of slant-leg bridges would provide an iconic structure within the landscape. The length of the two bridges, combined with the relatively short viaduct section between, should translate into less disturbance in the landscape with less rock cut required along the roadway (due to the short viaduct section), and limited disturbance associated with each column pad location due to the need for fewer columns. It is anticipated that the use of this bridge architecture would enhance the visual quality of the project area.

The discussion below identifies the changes to the visual environment with this Alternative for each user group, and Table 4-5 at the end of the section summarizes these potential changes in visual quality.

Driver/Roadway Travelers: For drivers and passengers on the roadway, views to the bridges would be oblique as they approached each structure. Because the support elements are beneath the structure, they would not be as visually prominent compared to the tied-arch bridge option. As with the previous Alternatives, the roadway would be in a new location affording these users new views currently not provided along the existing SR-140.

Along the viaduct section, the impacts should be the same as those discussed under Alternatives S and S2-V1, except that this viaduct structure would be much shorter, limiting the area of rock cut along the roadway as well as the retaining wall structure.

For the roadway traveler, this Alternative is anticipated to maintain the existing high overall visual quality of the area. The proposed bridges would provide an iconic image within the canyon area. The viaduct section would add a new wall element, which would be an encroachment into the view. However, of the three S alignments, Alternative S2-V2 has the shortest viaduct section, so this encroachment impact is reduced compared to the other Alternatives.

It is anticipated that this Alternative would only slightly lower the overall visual quality ratings of the area for this user group. Overall visual quality would remain high, with high vividness and moderately high intactness and high unity.

Merced River Users: For the Merced River user group, as with the roadway users, the bridges would be a new dramatic element in the landscape, but the existing high visual quality of the area would likely be maintained. The viaduct portion of the alignment would be a similar impact as that described in Alternative S, although this impact would be substantially less than the other two Alternatives.

For the river user, it is anticipated that the overall visual quality may be reduced slightly due to the presence of the wall and viaduct, but would still fall within the moderately high to high range. It is anticipated that the bridges would be more of a focal element in the landscape for the river users and would draw the viewer's attention away from the viaduct section. The overall visual quality under this Alternative is anticipated to remain at high with high vividness and unity, with moderately high intactness.

Hiker/Trail Users: For the trail user, the impacts are the similar to those discussed under Alternative S2-V1. However, in this Alternative, the viaduct section of the project would be only 66 feet long between the two bridges. The shortness of this section of viaduct greatly

reduces the impacts of the wall paralleling Incline Road. It is anticipated that under this Alternative, the overall visual quality for the trail user would remain high, with high vividness, moderate intactness and high unity.

Table 4-5: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative S2-V2 – Viaduct Realignment w/ Slant-Leg Bridge

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	6.0	5.6	5.4	6.2	6.0	6.00	5.80
Merced River Users	6.4	6.0	5.6	5.4	6.4	5.9	6.13	5.77
Hiker/Trail Users	6.2	6.0	5.6	5.4	6.4	5.9	6.06	5.77

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.7 Build Alternative T – Northerly Tunnel Realignment

The Tunnel Alternative follows the same alignment as the Open Cut Realignment Alternative C. The impacts associated with the bridge elements are the same for both Alternatives, since these elements are located in the same positions and at the same scale. The major difference between the two is the use of a tunnel in place of the open cut slope proposed in Alternative C. The tunnel is anticipated to be 725 feet long.

The tunnel would leave intact most of the existing hillside and its associated vegetation. There would likely be some cutting of the slope right at the tunnel portals, although this is anticipated to be minor. The tunnel width would be narrower than the roadway prism in the open-cut Alternative because the two benches needed to catch rockfall would not be required. However, the tunnel would require a 4-foot emergency walkway for a total width of 44 feet.

The paradox of the tunnel Alternatives (including both T and T-3) is that while preserving the scenic quality of the area by limiting the disturbance foot print of the Alternative, the tunnel removes the views into the scenic area for those on the roadway. Specific changes to the visual environment for each user group unit are discussed below. Table 4.6 at the end of the section

summarizes the anticipated effects of this Alternative to the visual quality of the project area by user group.

Driver/Roadway Travelers: As in the Open Cut Alternative, views from the new roadway would provide vistas to the distance that are not currently found in the existing alignment of the roadway. However, with a tunnel in place of the open cut, these new vistas would be limited to the bridge areas and at the tunnel portals. Views within the tunnel would be limited to the tunnel walls. The tunnel walls would introduce a new visual element along the roadway, where currently views of walls do not exist.

The effect of the new tunnel on the visual quality from the roadway would be to reduce it in the immediate area from high to moderate, with moderately high vividness, with moderate intactness and unity. The vistas from the bridges that the new alignment might add to the current views would help to increase the overall vividness, while the tunnel walls and limited views would detract. The removal of the two temporary bridges with bridges better designed and suited to the landscape of the area would also help to increase the intactness and unity of the project area.

Merced River Users: Similar to the Open Cut Alternative, the tunnel Alternative would affect rafters and people along the banks of the river by the placement of new bridges. These would replace the existing temporary bridges, so as an element would not be new. However, the new bridges would be larger and higher than the existing bridges, which would help to open up the views along the river. The new bridges, with mitigation in the form of bridge architecture that compliments the environment, would appear to better fit the project area than the temporary bridges. The tunnel Alternative would not impact views from across the river, although there may be brief views of the tunnel portals, depending on the viewer's location on the river.

The effect of this Alternative for river users would be to lower the existing high overall visual quality of the area to moderately high, with high vividness, moderate intactness, and moderately high unity ratings. In replacing the temporary bridges with taller structures, the views along the river for rafters would be more open as they passed underneath the bridge. Because there would be brief or limited views of the tunnel portals to those along the river, it should not have a large impact on the quality of the view.

Hiker/Trail Users: The effect of the new bridges for this Alternative would be the same as described for the open cut Alternative. It is unlikely that there would be clear views to the tunnel portal, given the portals location in relationship to the trail. The overall visual quality of the area for trail users is expected to drop to a moderately high rating from its existing high rating, with moderately high vividness and unity, with moderate intactness.

Table 4-6: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative T – Northerly Tunnel Realignment

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	5.3	5.6	4.0	6.2	3.75	6.00	4.35
Merced River Users	6.4	5.75	5.6	4.3	6.4	4.75	6.13	4.93
Hiker/Trail Users	6.2	5.75	5.6	4.3	6.4	4.75	6.06	4.93

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.8 Build Alternative T-3 – Tunnel Realignment under Slide

In this Alternative, a tunnel measuring approximately 2200 feet long would be bored under the base of the slide into the hillside. The new roadway through the tunnel would include a 4-foot emergency walkway for a total width of 44 feet. The discussion below identifies the changes to the visual environment with this Alternative for each user group. Table 4-7 at the end of this section summarizes the potential effects to the visual quality on the project area by user group.

Driver/Roadway Travelers: Upon approaching the tunnel, roadway travelers would find the portal wall a new element within the landscape, since currently there are no walls along the corridor. Views within the tunnel would be limited to the tunnel walls. This view to the tunnel walls would be a new visual element along the roadway, where currently views of walls do not exist. Depending on its location, it is anticipated that the tunnel Operations and Maintenance building would be more visible to westbound traffic on SR-140 than eastbound traffic (because of the slide location, the building is anticipated to be on the eastern end of the tunnel). Siting of the building would be critical to its visual presence in the landscape; and with proper siting, it may be possible to lower the building profile and visibility. Those within the tunnel would likely not see the Operations and Maintenance building.

The effect of the new tunnel on the visual quality from the roadway would be to reduce it in the immediate area of the tunnel from high to moderately high, with moderately high vividness,

moderate intactness, and moderate unity. The ultimate visual quality within the tunnel would be dependent on its design.

Merced River Users: The most noticeable change for river users with this Alternative is that by placing SR-140 in a tunnel, the temporary bridges over the river can be removed. This would have the effect of opening up the views from the river. The tunnel portals would be a noticeable addition along the roadway, especially the eastern portal because of the flow of the river and the bend near the portal location. However, these portals are not anticipated to have a substantial presence in the viewscape for river users since they would not be located along the river.

The effect of this Alternative would be to maintain the already high overall visual quality of the area, with high vividness and unity and moderately high intactness. The removal of the temporary bridges is likely to increase the intactness rating because the encroaching elements created by the temporary bridges have been removed and no new bridges are included in this Alternative.

Hiker/Trail Users: Placing the roadway back onto its original alignment and through the tunnel, would reopen Incline Road to trail users. The tunnel portals would be a new visual element in the landscape to trail users. However, the portals would be located on the opposite bank, and would not be visually prominent to those on the trail. The removal of the temporary bridges would eliminate this presently-encroaching element. It is anticipated that the overall visual quality for these users will likely stay at the existing high rating with high vividness and unity. It is likely that intactness would increase due to the removal of the temporary bridges and the fact that no new bridges would be constructed in the area.

Table 4-7: Summary of Existing vs. Proposed Visual Quality¹ By User Group For Build Alternative T-3 – Tunnel Realignment under Slide

	OVERALL VIVIDNESS		GENERAL INTACTNESS		OVERALL UNITY		OVERALL VISUAL QUALITY PER USER GROUP ⁴	
	Exist. ²	Prop. ³	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Driver/Roadway Travelers	6.2	5.3	5.6	4.2	6.2	3.75	6.00	4.42
Merced River Users	6.4	6.4	5.6	6.0	6.4	6.4	6.13	6.27
Hiker/Trail Users	6.2	6.2	5.6	6.0	6.4	6.4	6.06	6.2

1 Visual Quality ratings are between 1 and 7 with 1 equaling very low and 7 equaling very high.

2 Existing Visual Quality Rating from the project area Table 3.1

3 Proposed Visual Quality Rating, post-construction assuming all proposed mitigation measures are used.

4 Overall Visual Quality = vividness+intactness+unity divided by 3

4.2.9 No-Build Alternative

With this Alternative, the existing temporary bypass would become permanent. The existing bridges, which currently encroach on the views along the river, would become permanent. However, because the temporary bridges are not designed for permanent placement, it is very likely that they would need to be replaced by an upgraded structure at some point in the future. Additionally, the temporary pavement currently on the Incline Road alignment would also need to be made permanent.

With the bypass on Incline Road and given how narrow that road bench is, there would not be room for the trail on this side of the river. The Ferguson Rockslide would also make it impossible to move the trail to the other bank. The effect of this would be to make the Incline Road Trail discontinuous along the river.

4.3 ANALYSIS OF KEY VIEWS

Because it is not possible to analyze every view within the project area, it is necessary to select a number of Key Viewpoints that represent the visual effects of the project. These Key Views from both landscape units show the potentially visual effects from the project. At the end of this

section, Table 4.7¹⁰ summarizes the effects of the Alternatives on the Key Views within the project area. Locations of the Key Viewpoints for each landscape unit can be seen in Figures 14 through 16, which represent typical views per user group.

The post-construction simulations shown for the Key Views on the following pages include the mitigation measures as described in Section 5 of this report, to the extent feasible given each particular view and Alternative. The most noticeable of these shown in the simulations include:

- An open railing from the bridges to open up views out from the roadway into the corridor;
- Angular, as opposed to rounded forms, on the bridge to better match the angularity of the rock out crops and new rock cuts in the corridor;
- Application of textures and patterns on wall elements;
- Color/staining of bridge and wall elements;
- Preservation of existing vegetation where feasible;
- Revegetation of disturbed areas; and
- Grading to minimize wall heights.

The Key Views within the project area are:

- **Key Viewpoint #D-4, Driver/Roadway User Group Unit:** This Key Viewpoint was taken from the centerline of the viaduct realignment Alternative. The view is to the southeast, across the Merced River. This viewpoint was selected because it shows the likely views from the new roadway. See Figure 27 Existing View.
- **Key Viewpoint #D-8, Driver/Roadway User Group Unit:** The photograph was taken from the shoulder of the existing roadway. The view was selected because it shows the new bridge location and the tie-in point for the new roadway alignment. See Figure 17 Existing View
- **Key Viewpoint #D-9, Driver/Roadway User Group Unit:** The photograph was taken from the shoulder of the existing roadway looking west toward the rockslide. The view was selected because it shows the hillside adjacent to the rockslide area where there are portals for the rock shed and tunnel Alternatives. See Figure 24 Existing View.

¹⁰ The evaluation and rating of the visual quality for each Key Viewpoint, as described in the text and shown in Table 4.1, was developed by a team of Landscape Architects and other staff using the post-construction views shown in comparison to the existing views. Responses were averaged for the 5 team members and presented here.

- **Key Viewpoint #D-10, Driver/Roadway User Group Unit:** The photograph is taken from the existing SR-140 roadway, near the existing closure point and is looking south toward the rockslide. It was selected because it shows the point where each of the different alignments begin to diverge from the existing roadway alignment. See Figure 18 Existing View.
- **Key Viewpoint #M-3, Merced River User Group Unit:** The photograph was taken from the base of the Ferguson slide, near the center of the river. The view was selected as a Key Viewpoint because it shows the western bridge crossing and its effects to river users. See Figure 19 Existing View.
- **Key Viewpoint #M-9, Merced River User Group Unit:** This Key Viewpoint is located on the river bank opposite the hillside where the new alignments would cut through. The view was selected because it demonstrates the effects of the Alternatives on the hillside from the perspective of the river users. See Figure 20 Existing View.
- **Key Viewpoint #M-11, Merced River User Group Unit:** The photograph was taken from the edge of the river east of the eastern bridge. The view shows the effects of the eastern bridge on the views at the eastern edge of the project for river users. See Figure 21 Existing View.
- **Key Viewpoint #H-2, Hiker/Trail User Group Unit:** This Key Viewpoint is located on the hiking trail and faces the new bridge on the western edge of the project. The viewpoint was chosen to show the effects to the views of the S2-V1 and S2-V2 Alternatives for those on the Incline Road trail. See Figure 38 Existing View.
- **Key Viewpoint #H-3, Hiker/Trail User Group Unit:** This Key Viewpoint is located on the hiking trail and faces the new bridge on the western edge of the project. The viewpoint was chosen to show the effects to the views of the C, S, and T Alternatives for those on the Incline Road trail (Note: Viewpoint H-3 is further south on the trail than Viewpoint H-2). See Figure 22 Existing View.

4.3.1 Open Cut Realignment Alternative (Alternative C)

For the open cut realignment Alternative, Key Viewpoints D-8, D-10, M-3, M-9, M-11, and H-3 are used to demonstrate the changes to the proposed environment from this Alternative.

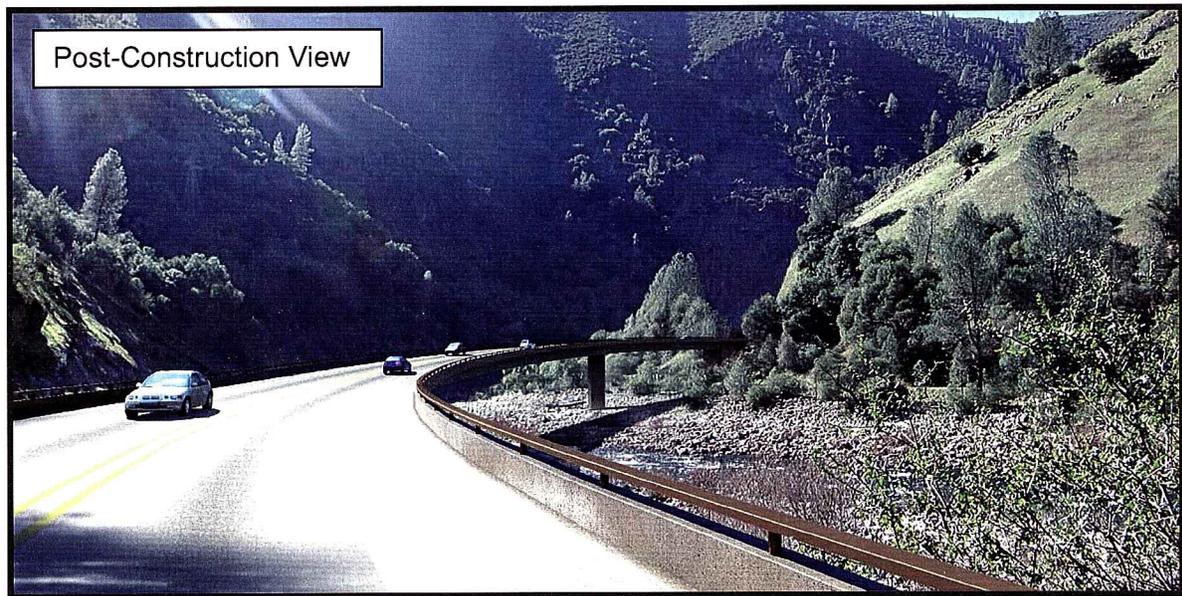
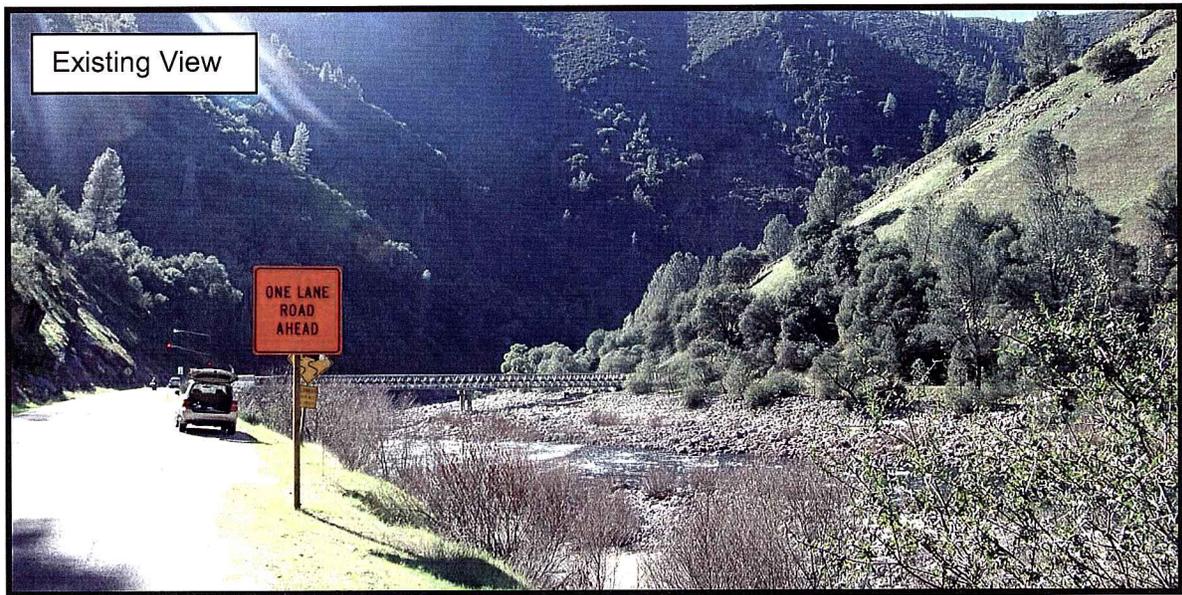
Key Viewpoint D-8, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 17.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway.

- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with moderately high vividness and intactness, and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge across the Merced River would be seen in the foreground and is partially obscured by the vegetation. There would be a large cut slope created on this hillside to accommodate the new roadway alignment.
- **Changes to Visual Character:** The most visible change to the environment would be the inclusion of the new bridge that sweeps across the Merced River and the addition of the large cut slope to the opposite hillside. The existing vegetation on the hillside would be removed and the unnatural appearance of the cut would be a noticeable addition to the landscape. (In this view, the cut slope is seen from the edge). The anticipated height of the cut is approximately 100 feet. In addition, the roadway width would appear wider at the cut slope because a 20-foot-wide bench is required to catch potential future rockfall from the cut.
- **Anticipated Viewer Response:** View sensitivity is expected to be moderate to high given the scenic nature of the corridor. The unnatural appearance of the cut slope and the wider roadway section associated within the cut slope area alter the roadway views typical along the rest of the SR-140 corridor. Regular travelers and residents would be the most sensitive to the changes, while tourists and infrequent travelers would likely be less sensitive due to their unfamiliarity with the corridor.
- **Resulting Visual Impact:** Adverse changes to the visual environment from this viewpoint are expected to be very noticeable, given the new roadway alignment. However, the rock cut and bench are not anticipated to have a large impact on this view due to the angle of the cut to the viewer. The overall visual quality of this view is anticipated to remain approximately the same.

Figure 17

**Viewpoint D-8, Driver/Roadway User Group
Open Cut Realignment Alternative (Alternative C)
With mitigation at 5 years post-completion**

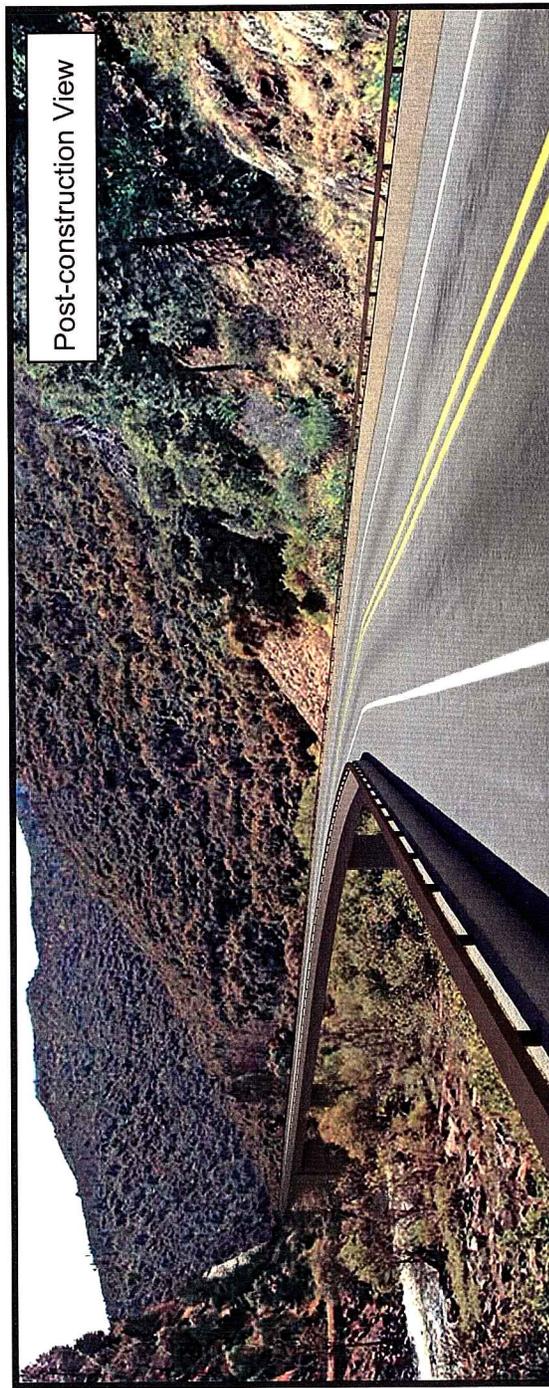
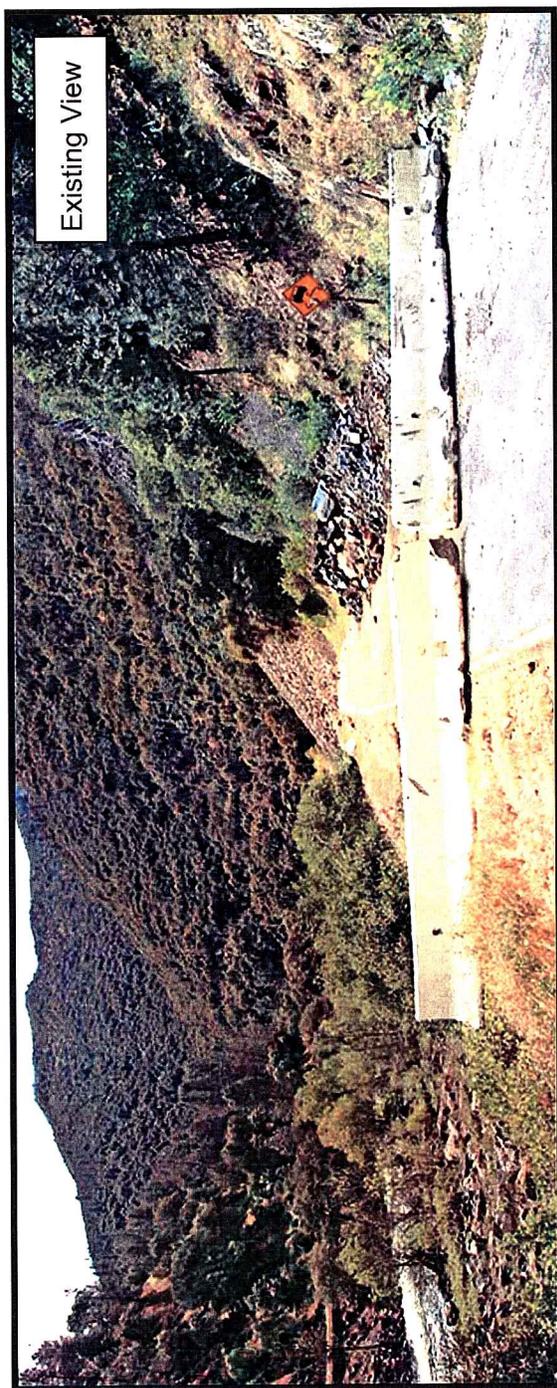


Key Viewpoint D-10, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 18.

- **Orientation:** The photo is taken to the south along the existing SR-140 highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately high vividness, moderately low intactness and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge across the Merced River would be seen in the foreground. There would be a large cut slope created on this hillside to accommodate the new roadway alignment.
- **Changes to Visual Character:** The most visible change to the environment would be the inclusion of the new bridge that sweeps across the Merced River and the addition of the large cut slope to the opposite hillside. The existing vegetation on the hillside would be removed and the unnatural appearance of the cut would be a noticeable addition to the landscape. (In this view, the cut slope is seen from the edge). The anticipated height of the cut is approximately 100 feet.
- **Anticipated Viewer Response:** Viewer sensitivity is expected to be moderate to high given the scenic nature of the corridor. The unnatural appearance of the cut slope and the wider roadway section associated within the cut slope area alter the roadway views typical along the rest of the SR-140 corridor. Regular travelers and residents would be the most sensitive to the changes, while tourists and infrequent travelers would likely be less sensitive due to their unfamiliarity with the corridor.
- **Resulting Visual Impact:** Changes to the visual environment from this viewpoint are expected to be very noticeable, given the removal of a number of encroaching elements associated with the blocked road along with the sweep of the new bridge. The cut slope from this view is seen only from the side, which lessens its impact. The overall visual quality of this view would increase slightly to moderately high, with moderately high vividness and unity ratings. Intactness is anticipated to increase to moderately high as well.

Figure 18

**Viewpoint D-10, Driver/Roadway User Group
Open Cut Realignment Alternative (Alternative C)
With mitigation at 5 years post-completion**

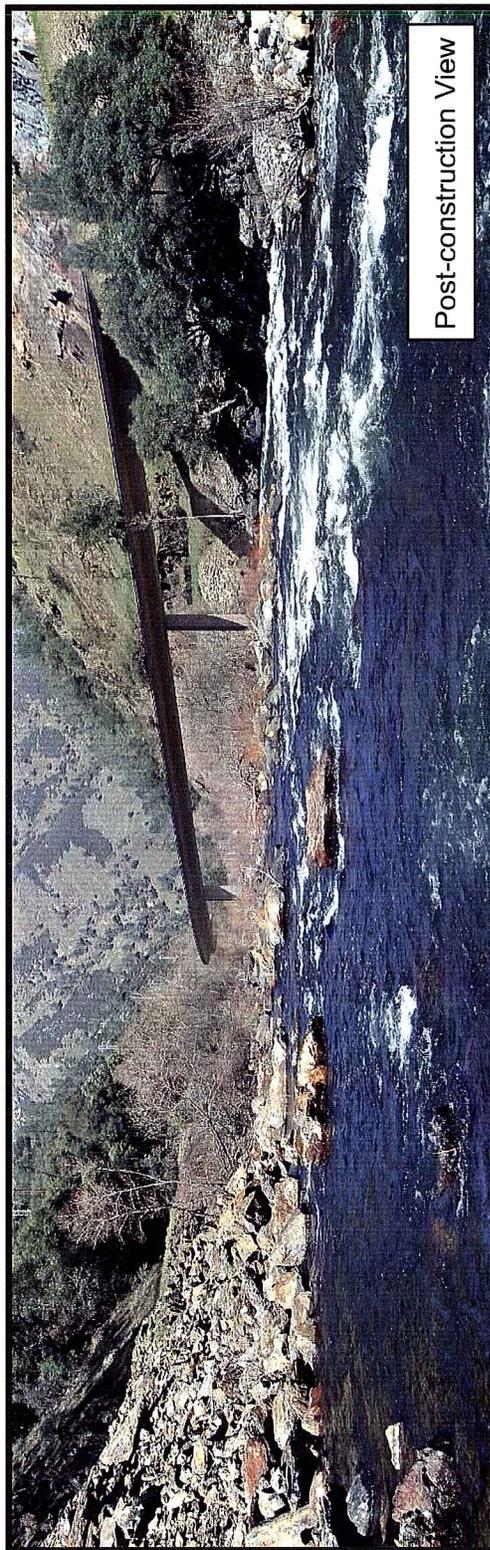
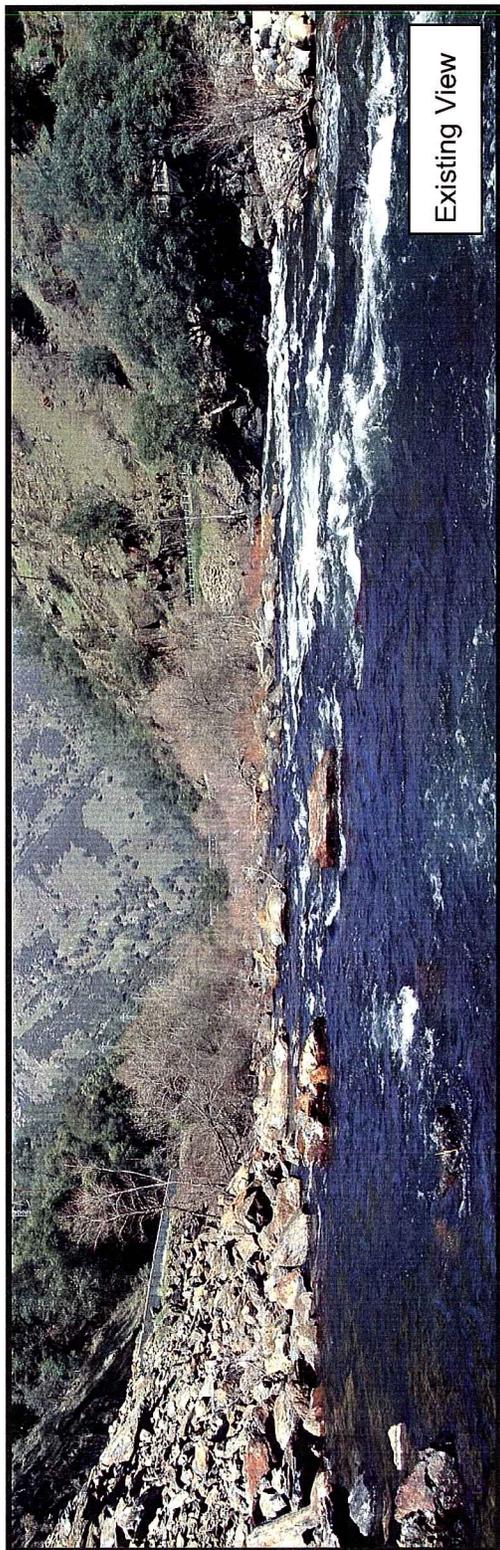


Key Viewpoint M-3, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 19.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking northward down the Merced River.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness and intactness, and moderately high unity.
- **Proposed Project Features:** In the open cut realignment Alternative, the western bridge crossing the Merced River can be seen. In addition, a portion of the cut slope would also be visible.
- **Changes to Visual Character:** Changes in this view would be the inclusion of the abutment and wing walls associated with the bridge and a portion of the cut slope from the river area. Given the height of the cut slope, much of the vegetation on the upper portion of the slope would be removed. Vegetation on the lower slope would help mask some of the cut, but the upper portions would still be visible to those along the river.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment. Vegetation along the river would help screen some of these changes, but other changes up the hillside would be evident to the viewer.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would have a noticeable impact to the visual environment. It is anticipated that the visual quality of this view would be reduced to moderate, with moderately high vividness, and a moderate rating for intactness and unity.

Figure 19

**Viewpoint M-3, Merced River User Group
Open Cut Realignment Alternative (Alternative C)
With mitigation at 5 years post-completion**

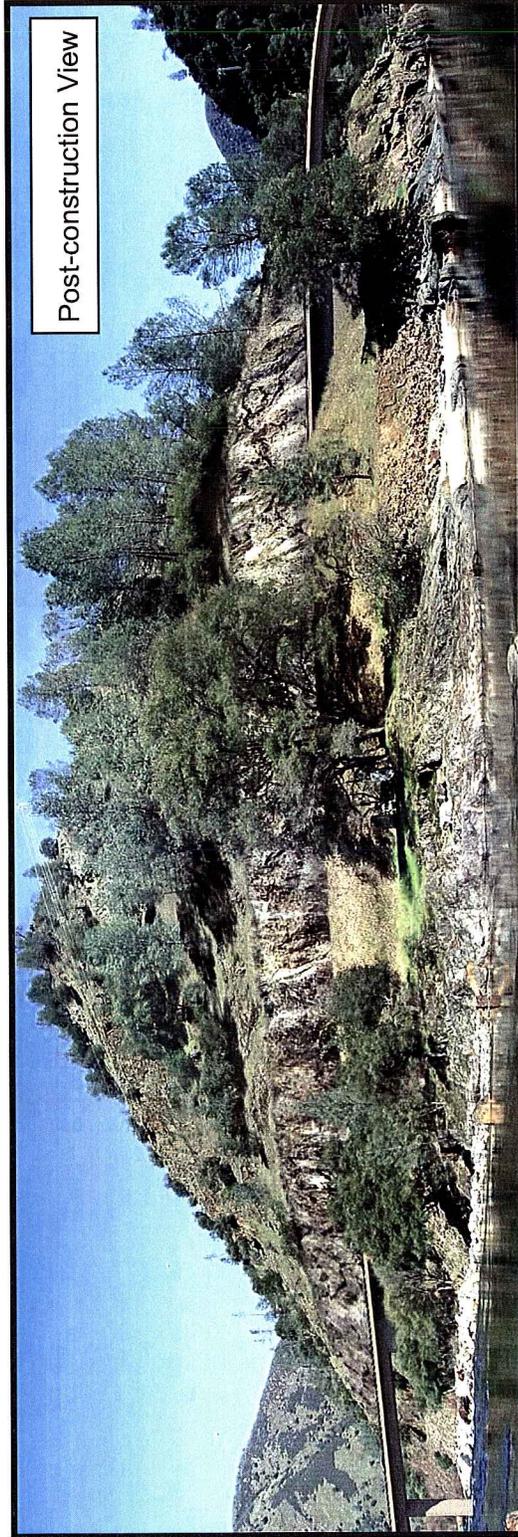
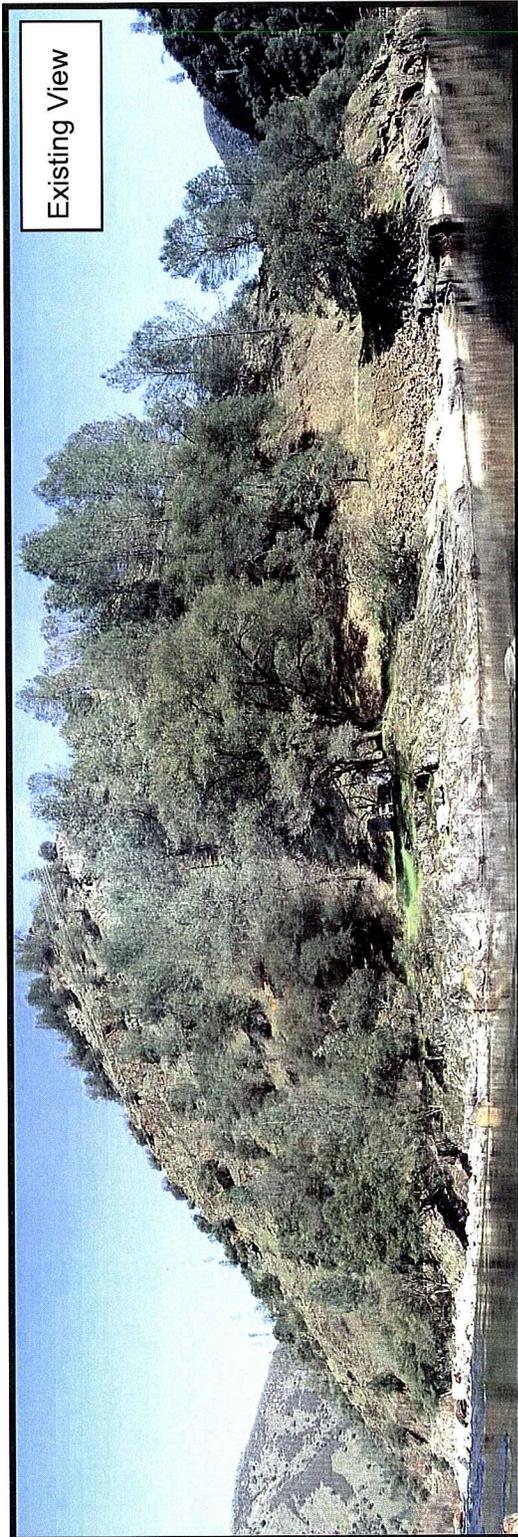


Key Viewpoint M-9, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 20.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking toward the hillside on the opposite bank of the river from the current highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness, intactness, and unity.
- **Proposed Project Features:** In the open cut realignment Alternative, the two bridges that cross the Merced River can be seen. In addition, the top portion of the cut slope would also be visible.
- **Changes to Visual Character:** Changes in this view would be the inclusion of the abutment and wing walls associated with the two bridges and the view of the cut slope from the river area. Given the height of the cut slope, much of the vegetation on the upper portion of the slope would be removed. Vegetation along the river would help screen some of these changes, but other changes up the hillside would be evident to the viewer.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment. Vegetation along the river would help screen some of these changes, but others would be evident as the viewer raised their eye up the hillside.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would have a noticeable impact to the visual environment with both the rock cut and the two bridges visible. It is anticipated that the visual quality of this view would be reduced to a moderate rating, with moderately high vividness, and moderate intactness and unity.

Figure 20

**Viewpoint M-9, River User Group
Open Cut Realignment Alternative (Alternative C)
With mitigation at 5 years post-completion**

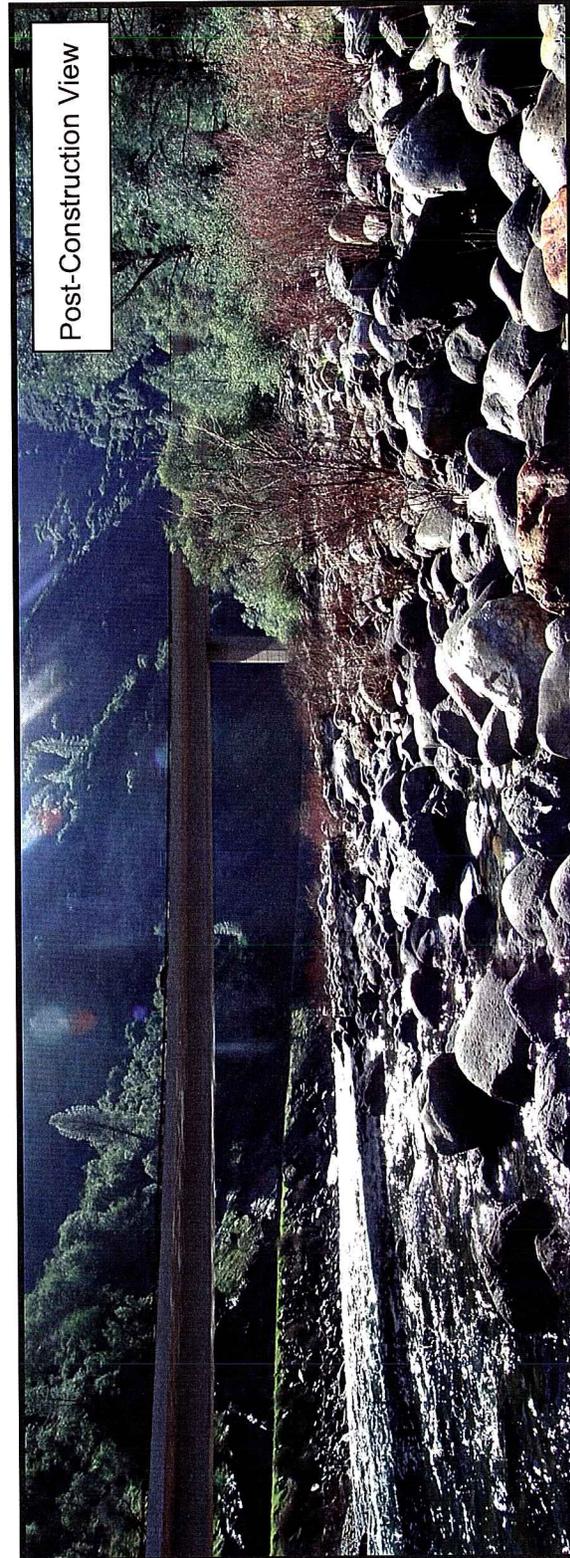
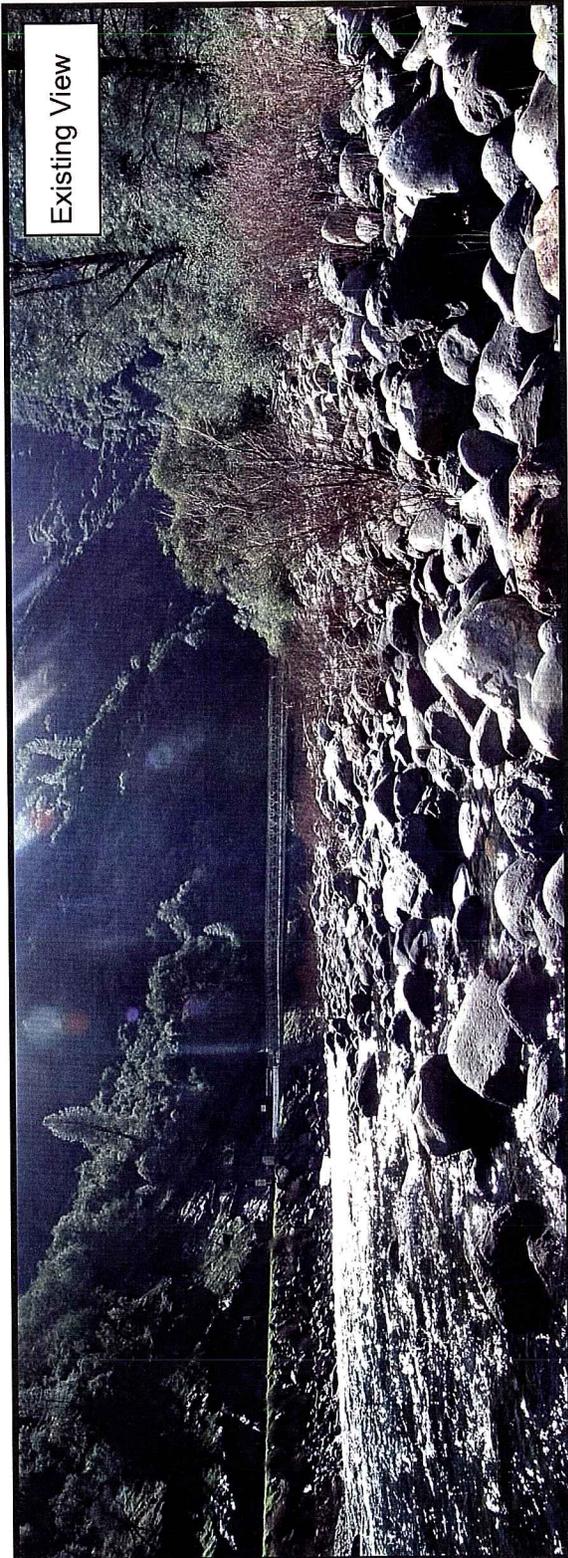


Key Viewpoint M-11, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 21.

- **Orientation:** The photo is taken to the west from the north bank of the Merced River.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with high vividness, moderately high intactness and moderately high unity.
- **Proposed Project Features:** Under this Alternative, the bridge crossing the Merced River from the hillside opposite the current roadway is visible.
- **Changes to Visual Character:** From this viewpoint, the sweep of the new bridge across the river would be seen by those users in or along the river. The existing bridge would be removed and the new bridge would be taller, which has the effect of opening up the views under the bridge. Vegetation along the river would screen the cut slope on the hillside, although the cut slope would become more evident as the user moved down river.
- **Anticipated Viewer Response:** As in the other views, it is anticipated that viewers would have a moderate level of sensitivity to the visual environment. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable. Given that the existing bridge is removed and a new larger structure replaces it, views along the river are expected to be more open than with the existing bridge. The overall visual quality of the view is anticipated to decrease to moderate with a high rating for vividness, moderately low for intactness and moderate for unity.

Figure 21

**Viewpoint M-11, River User Group
Open Cut Realignment Alternative (Alternative C)
With mitigation at 5 years post-completion**

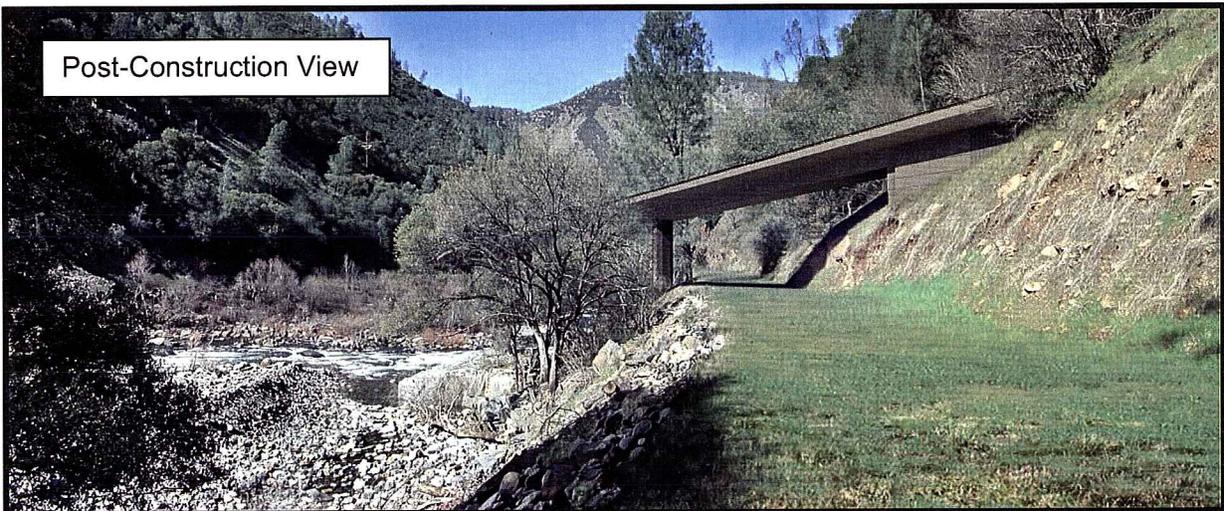


Key Viewpoint H-3, Hiker/Trail User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 22.

- **Orientation:** The photo is taken to the north along the existing temporary bypass (Incline Road).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately high vividness, moderate intactness and moderate unity.
- **Proposed Project Features:** Under this Alternative, the bridge crossing the Merced River would be visible. The abutment wall would also be visible. The existing bypass guardrail would be removed.
- **Changes to Visual Character:** In this Alternative, the new bridge would be evident as it crosses the river and hiking trail. The abutment and wing walls associated with the bridge would be the elements most prominent in this view. The height of the bridge would help diminish its presence in the landscape for those along the trail. Vegetation along the river would also help to partially screen the views to the bridge.
- **Anticipated Viewer Response:** Hikers and mountain bike users of the trail would be anticipated to have a moderate to moderately high sensitivity to the visual environment; with locals having the greater sensitivity due to their familiarity.
- **Resulting Visual Impact:** The resulting visual impact is anticipated to be very noticeable, given the removal of roadway elements associated with the bypass and the inclusion of the bridge and abutment wall. Currently, this portion of Incline Road is off-limits to trail users since it is used as the temporary bypass. The opening of the trail with the new alignment would bring users back. The overall visual quality of the view is expected to remain moderate. Vividness would decrease to moderate while intactness and unity would remain moderate.

Figure 22

**Viewpoint H-3, Trail User Group
Open Cut Realignment Alternative (Alternative C)
with mitigation at 5 years post-completion**



4.3.2 Rock Shed Alternative (Alternative R)

Key Viewpoints D-8, D-9, D-10, and M-3 demonstrate the project impacts to the different user groups. Since this Alternative removes the temporary bypass from the Incline Road area, but does not add new elements along the trail, no simulation was done along the hiking trail. It can be assumed that for those on the hiking trail, the re-establishment of the trail in the project area would be an improvement over the existing situation.

Key Viewpoint D-8, Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 23.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with moderately high vividness and intactness, and moderate unity.
- **Proposed Project Features:** With the Rock Shed Alternative, the existing temporary bridge over the Merced River would be removed and the roadway located on the original alignment of SR-140. At this vantage point the exposed wall of the rock shed is located in the distant foreground and is mostly obscured by the existing vegetation. As the driver approached the rock shed, it would become more prominent in the landscape.
- **Changes to Visual Character:** The most prominent change to this view is the removal of the temporary bridge encroachment. The exposed wall of the rock shed is not prominent enough to change the visual environment in this view.
- **Anticipated Viewer Response:** It is anticipated that viewers along driving along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** The impact associated with Alternative R from this vantage point is anticipated to be barely noticeable. The removal of the visual encroachment from the temporary bridge would improve the overall visual quality. The overall visual quality of the view would increase to high with high vividness, intactness, and unity.

Figure 23

**Viewpoint D-8, Driver/Roadway User Group
Rock Shed Alternative (Alternative R)
with mitigation at 5 years post-completion**



Key Viewpoint D-9, Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 24.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway. The view is closer to the rockslide area than the D-8 viewpoint.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high with a high vividness, and a moderately high rating for both intactness and unity.
- **Proposed Project Features:** The proposed rock shed structure would be the most noticeable new element in the landscape.
- **Changes to Visual Character:** The proposed rock shed would be prominent in the mid- to foreground of the view. The walls and shed portal would be the features that are visually the most noticeable. These elements would be new to the visual landscape along SR-140.
- **Anticipated Viewer Response:** It is anticipated that viewers driving along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** The impact associated with Alternative R from this vantage point is anticipated to be very noticeable. The addition of the rock shed wall along the river bank would add a visually prominent encroachment to the landscape. It is anticipated that the overall visual quality would decrease to moderate with moderately high vividness, and moderate intactness unity.

Figure 24

**Viewpoint D-9, Driver/Roadway User Group
Rock Shed Alternative (Alternative R)
with mitigation at 5 years post-completion**

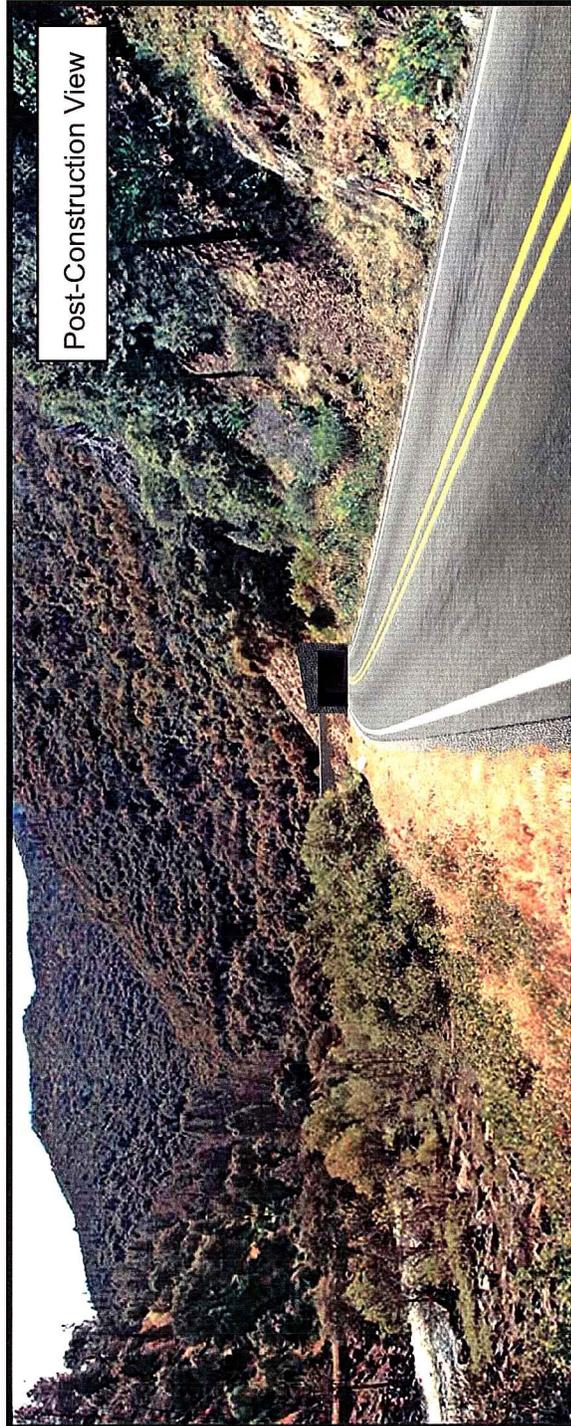


Key Viewpoint D-10, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 25.

- **Orientation:** The photo is taken to the south along the existing SR-140 Highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately high vividness, moderately low intactness and moderate unity.
- **Proposed Project Features:** Under this Alternative, the entry portal to the rock shed structure would be visually prominent in the mid-ground.
- **Changes to Visual Character:** The entrance portal for the eastbound traffic would be visually prominent in the mid-ground. The exposed wall along the shed would be visible, but less prominent as well, at an oblique angle to the roadway traveler.
- **Anticipated Viewer Response:** Viewer sensitivity is expected to be moderately high given the scenic nature of the corridor. Regular travelers and residents would be the most sensitive to the changes while tourists and infrequent travelers would likely be less sensitive due to their unfamiliarity with the corridor.
- **Resulting Visual Impact:** The impact associated with Alternative R from this vantage point is anticipated to be very noticeable. The addition of the rock shed portal and to a lesser extent the wall along the river bank, would add a visually prominent encroachment to the landscape, replacing the encroaching elements from the bypass. It is anticipated that the overall visual quality would remain moderate with moderately high vividness, and moderate intactness and unity.

Figure 25

**Viewpoint D-10, Driver/Roadway User Group
Rock Shed Alternative (Alternative R)
with mitigation at 5 years post-completion**

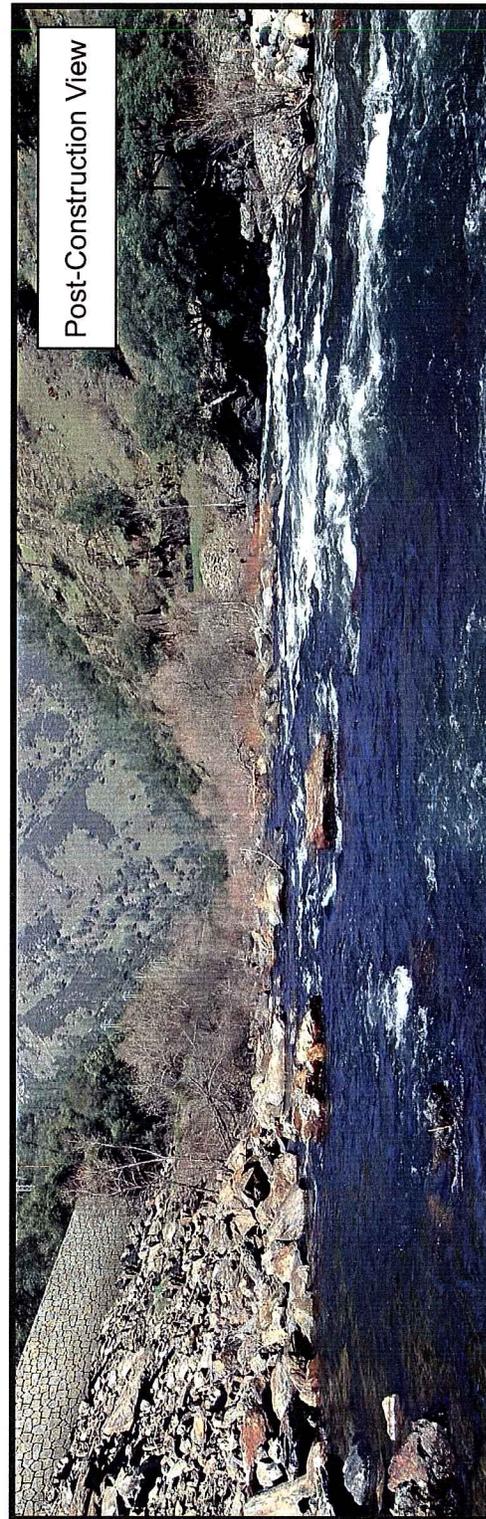
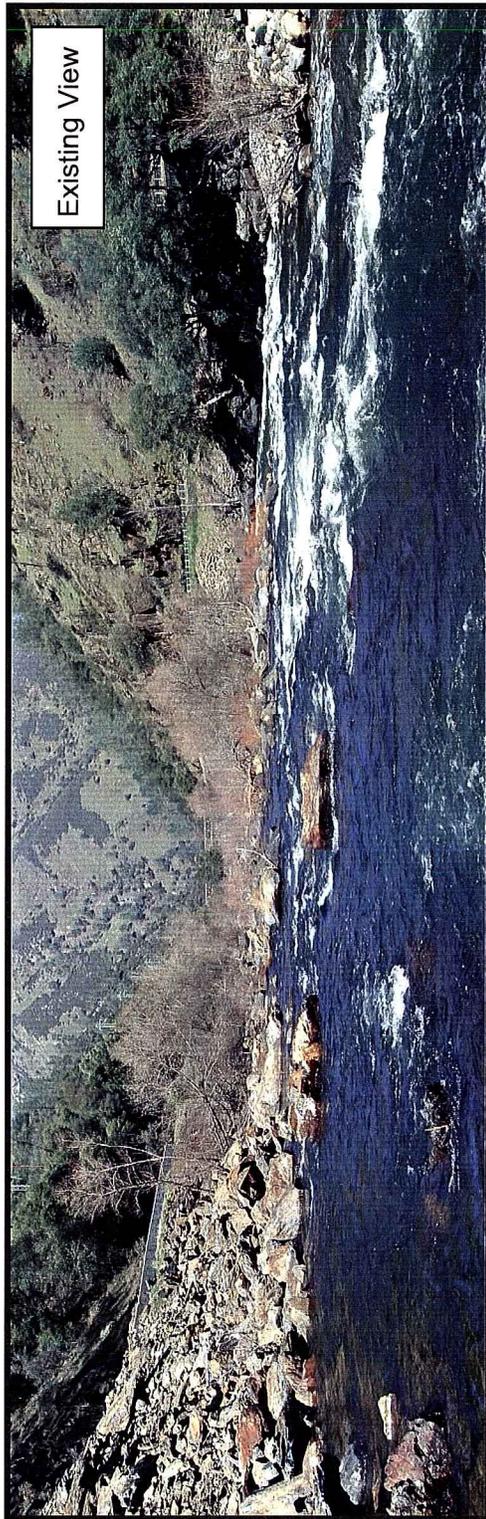


Key Viewpoint M-3, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 26.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking northward down the Merced River.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness and intactness, and moderately high unity.
- **Proposed Project Features:** In the rock shed Alternative, the exposed wall along the river can clearly be seen. The existing bypass bridge, in the background and partially obscured by vegetation, would be removed.
- **Changes to Visual Character:** The addition of the wall along the river would add a new and visual prominent element to the river bank. From the river, the wall would appear quite tall. In addition, the river bank below the slide does not have any screening vegetation that might help to mask the wall.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be very sensitive to the changes in the visual environment. For those on the river, such as rafters, the westward flowing river makes a bend to the north at this point giving clear and sustained views of the structure.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would have a very noticeable impact to the visual environment. The exposed wall of the rock shed would be very prominent. It is anticipated that the visual quality of this view would be reduced to moderately low, with moderate vividness, and moderately low intactness and unity.

Figure 26

**Viewpoint M-3, Merced River User Group
Rock Shed Alternative (Alternative R)
with mitigation at 5 years post-completion**



4.3.3 Viaduct Realignment Alternative (Alternative S)

For the viaduct realignment Alternative, Key Viewpoints D-4, D-8, D-10, M-3, M-9, M-11, and H-3 are used to demonstrate the changes to the proposed environment from this Alternative.

Key Viewpoint D-4, Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 27.

- **Orientation:** The photo is taken to the southwest from the centerline of the new SR-140 alignment for this Alternative.
- **Existing Visual Character/Quality:** The existing visual quality in this view is rated high, with a high vividness, intactness, unity.
- **Proposed Project Features:** Under this Alternative, the road would extend out to the bridge over the Merced River. A small cut slope would be seen on the left side of the roadway.
- **Changes to Visual Character:** From this viewpoint, the roadway and its associated elements would constitute new elements in the view. Currently the view is to the vegetation on the hillside opposite the existing SR-140 alignment and is not a view typical from most user groups, since it is off of any trail or pathway. Roadway users would be the only user group to experience these new views. From their perspective, the new roadway is wider than the existing SR-140 roadway, primarily because of the wider shoulders. The existing alignment of this viewpoint is closer to the river. The new alignment would elevate the view onto the hillside, and the roadway user would be treated to longer views and vistas than they currently have available.
- **Anticipated Viewer Response:** It is anticipated that viewers would be sensitive to the new views and the open vistas provided by the new alignment.
- **Resulting Visual Impact:** From a roadway users perspective, the effect of the new alignment would be to reduce their visual quality from the existing high rating to moderate with moderately high vividness, and moderate intactness and unity.

Figure 27

**Viewpoint D-4, Driver/Roadway User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**

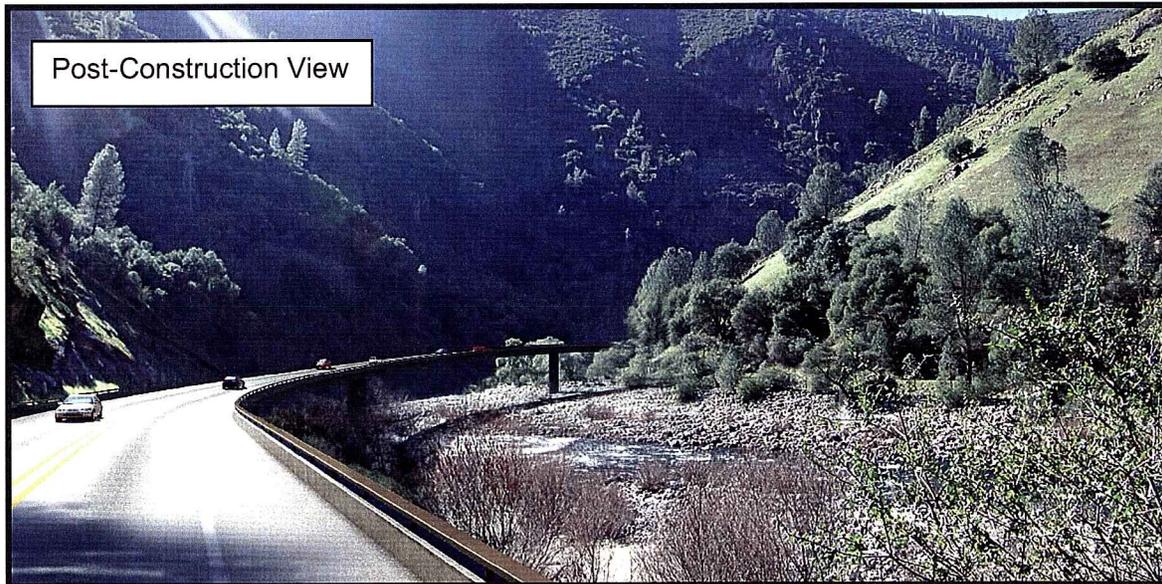
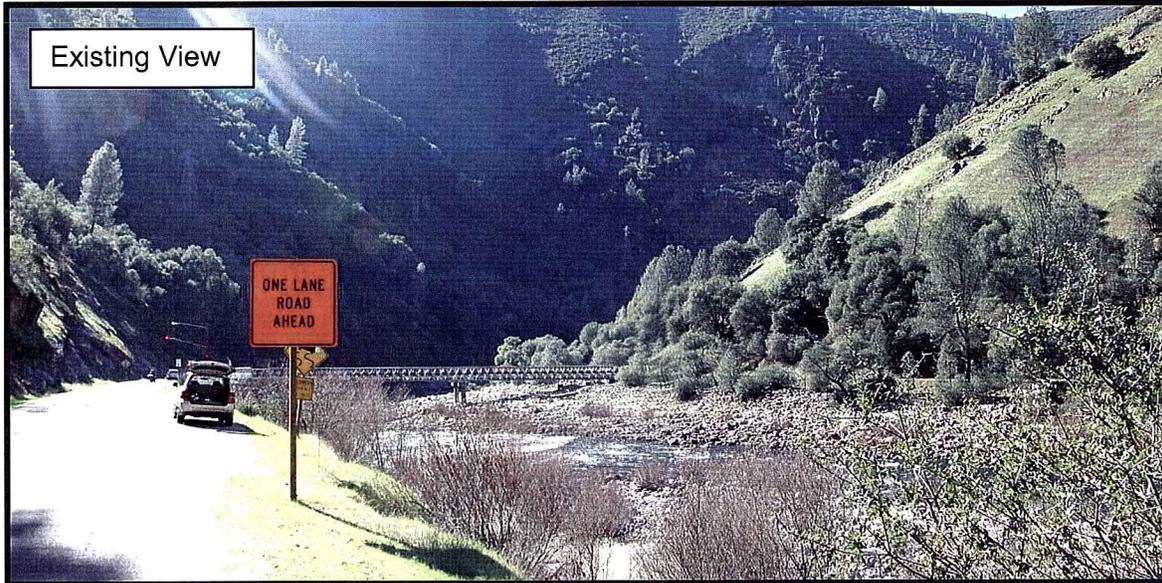


Key Viewpoint D-8, Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 28.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with moderately high vividness and intactness, and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge would cross the Merced River from the hillside opposite the current roadway. There would be a large cut slope created on this hillside to accommodate the new roadway alignment.
- **Changes to Visual Character:** From this viewpoint, the majority of the new structure would be visible. The structure would be lower on the hillside than the alignment for either the C or T Alternative, so there would be less screening vegetation in front of the structure. Because the roadway is cantilevered over the retaining wall, a small cut slope would be present in the view. The cantilevered wall section would also visually reduce the wall height because of the shadow line created by the roadway and because the wall would be set back from the edge of roadway.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would be very noticeable in the visual environment. However, with the balance of the removals and additions, it is anticipated that the overall visual quality of this view would remain approximately the same with moderately high vividness, intactness and unity.

Figure 28

**Viewpoint D-8, Driver/Roadway User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**

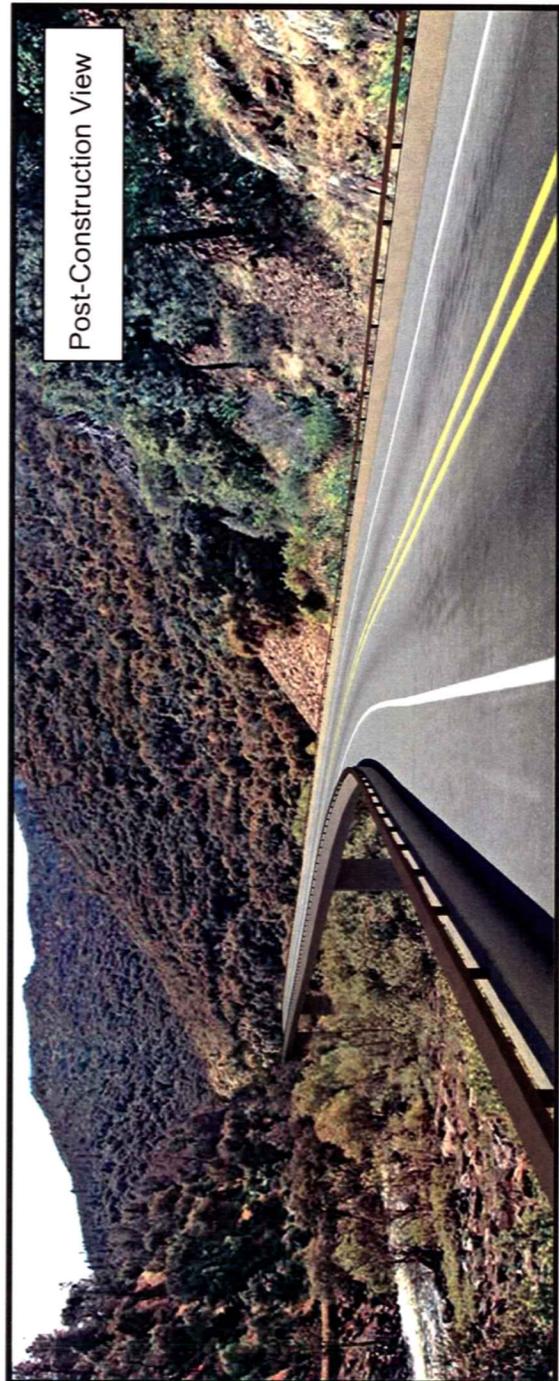


Key Viewpoint D-10, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 29.

- **Orientation:** The photo is taken to the south along the existing SR-140 Highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately high vividness, moderately low intactness and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge across the Merced River would be seen in the foreground.
- **Changes to Visual Character:** The most visible change to the environment would be the inclusion of the new bridge that sweeps across the Merced River.
- **Anticipated Viewer Response:** Viewer sensitivity is expected to be moderate to high given the scenic nature of the corridor. Regular travelers and residents would be the most sensitive to the changes, while tourists and infrequent travelers would likely be less sensitive due to their unfamiliarity with the corridor.
- **Resulting Visual Impact:** Changes to the visual environment from this viewpoint are expected to be very noticeable, given the sweep of the new bridge and the removal of the road blocks and rubble. The overall visual quality of this view is anticipated to remain essentially the same at moderately high with moderately high vividness, intactness, and unity.

Figure 29

**Viewpoint D-10, Driver/Roadway User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**

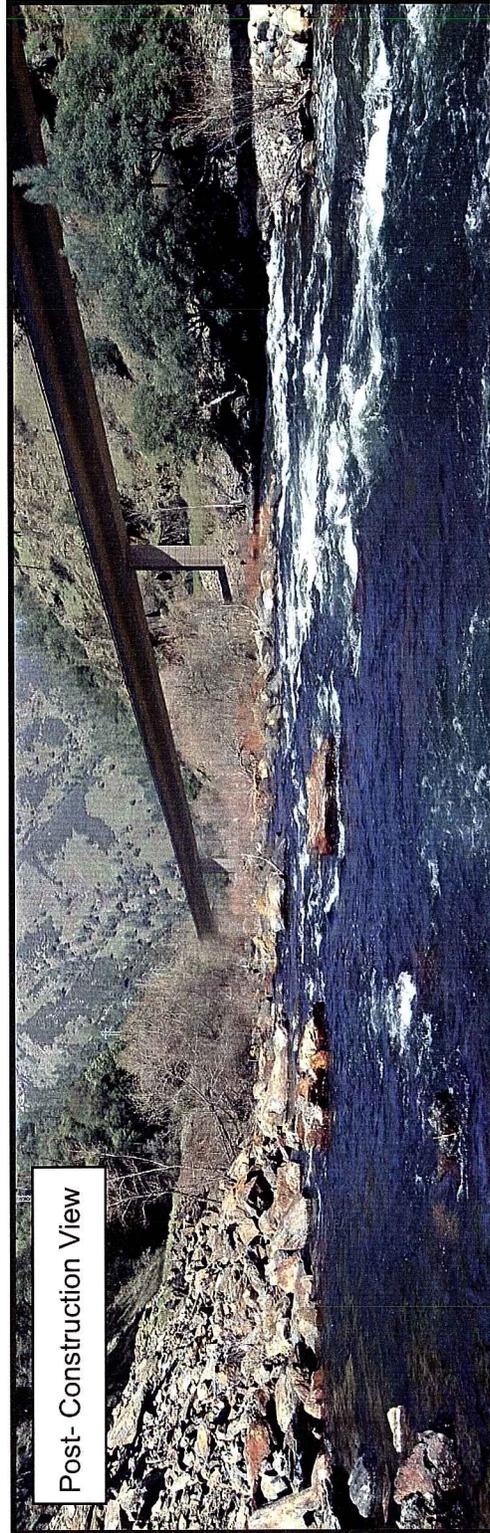
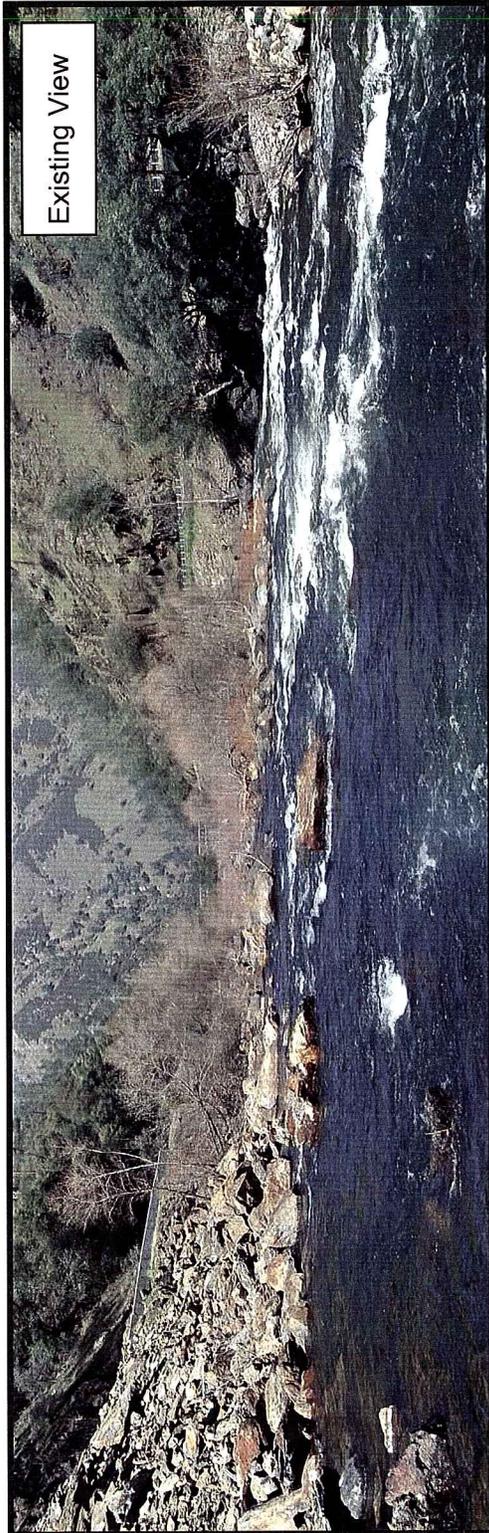


Key Viewpoint M-3, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 30.

- **Orientation:** The photo is taken to the north from the base of the Ferguson Rockslide (west bank of Merced River).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness and intactness, and moderately high unity.
- **Proposed Project Features:** In the Viaduct Realignment Alternative, the bridge spanning the Merced River can be seen.
- **Changes to Visual Character:** From this viewpoint, the sweep of the new bridge across the river would be seen by users in or along the river. The existing temporary bridge would be removed (seen at a distance in the Existing View and partially screened by the vegetation), and the new bridge would be taller, which has the effect of opening up the views under the bridge.
- **Anticipated Viewer Response:** As in the other views, it is anticipated that viewers would have a moderate level of sensitivity to the visual environment. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be noticeable. The new bridge would be taller than the existing bridge, and views along the river should be more open. The overall visual quality of the view is anticipated to decrease to moderately high, with high vividness, and moderately high intactness and unity.

Figure 30

**Viewpoint M-3, Merced River User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**

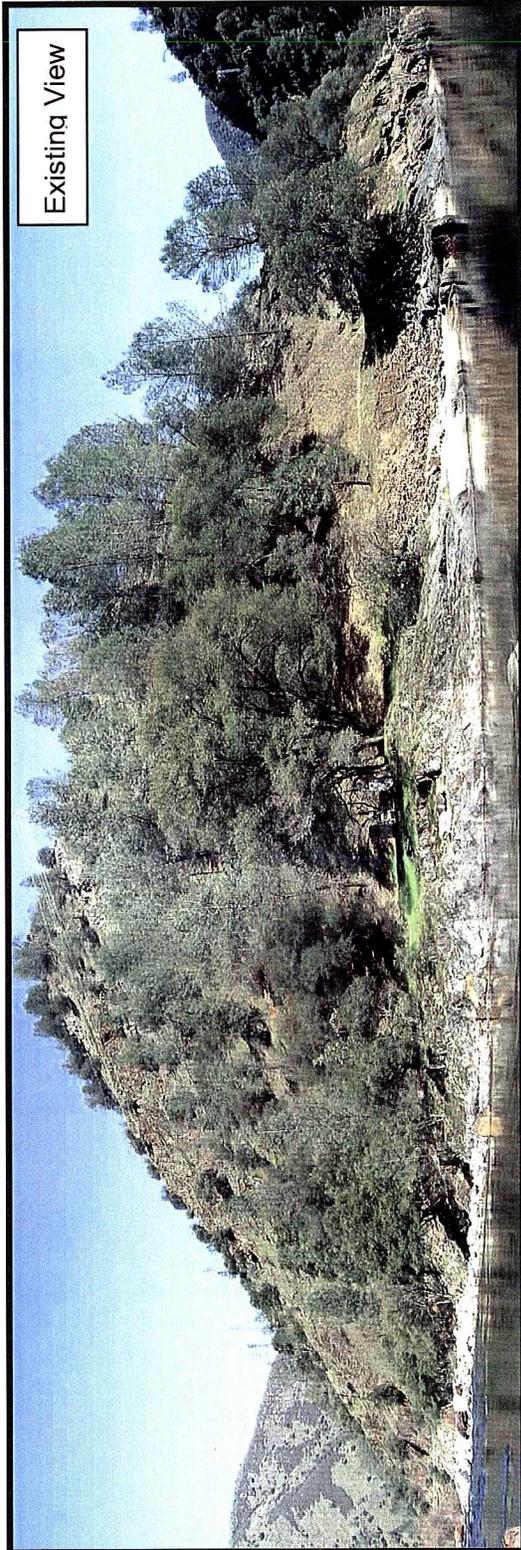


Key Viewpoint M-9, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 31.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking toward the hillside on the opposite bank of the river from the current highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness, intactness, and unity.
- **Proposed Project Features:** In this Alternative, both bridges and the portion of the highway on the retaining wall would be prominent to the viewer along the river.
- **Changes to Visual Character:** The largest change to the visual environment would be the imposition of the retaining wall and the roadway above it where currently the narrow temporary bypass exists. Because this portion of the roadway sits closer to the river, and this portion of the river has little large vegetation that might screen the wall, the new structure would be a big presence in the landscape.
- **Anticipated Viewer Response:** It is anticipated that viewers would have a higher level of sensitivity to the visual environment, given the scenic nature of the canyon and the anticipation of higher scenic quality associated with that knowledge. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable. The wall and new roadway would be a prominent addition to the view and while mitigation can help to blend the new structure, it would not fully mask it from view. The addition of the two bridges should not create as big a visual change since these replace existing bridges and are higher, which open views under the bridges as compared to the temporary bridges. It is anticipated that the resulting visual impact would decrease the existing overall visual quality to moderately high with high vividness, and moderately high intactness and unity.

Figure 31

**Viewpoint M-9, Merced River User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**

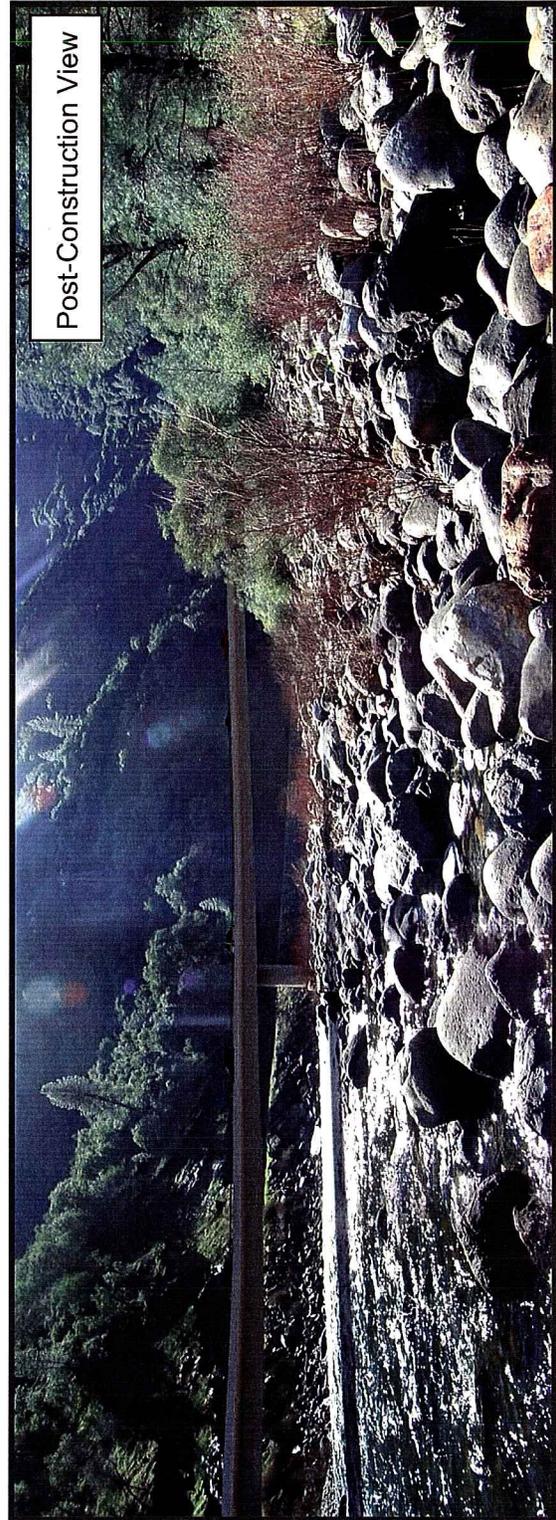
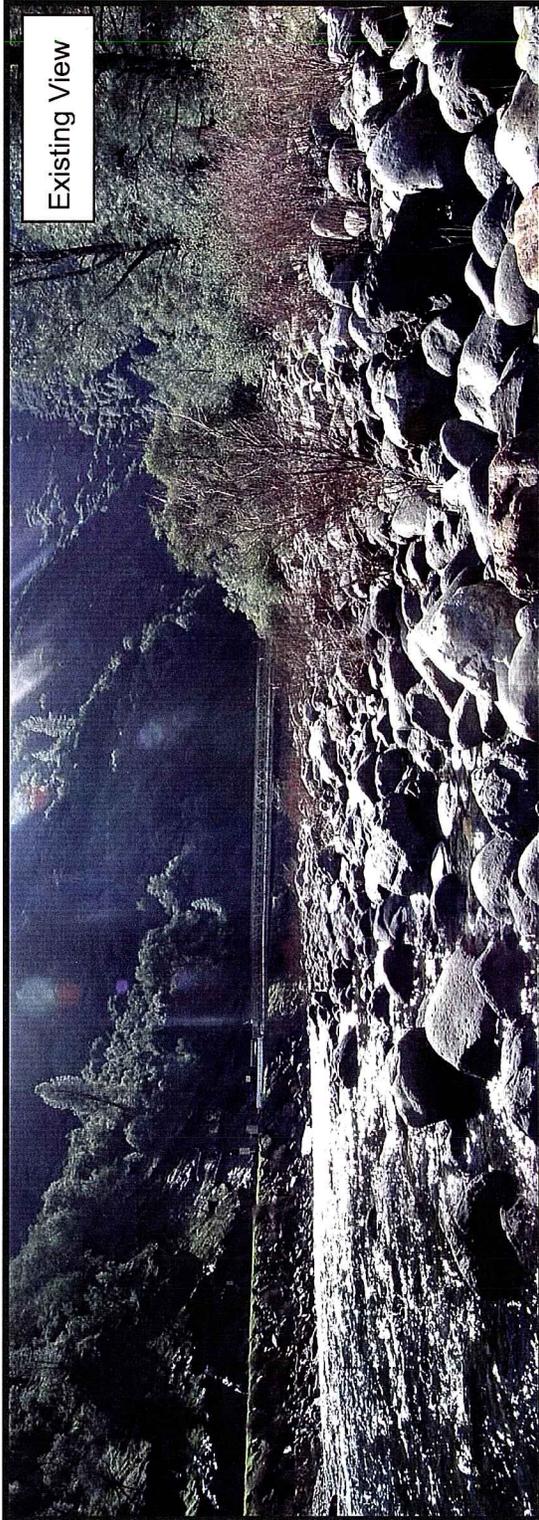


Key Viewpoint M-11, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 32.

- **Orientation:** The photo is taken to the west from the north bank of the Merced River.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with high vividness, moderately high intactness and moderately high unity.
- **Proposed Project Features:** Under this Alternative, the bridge crossing the Merced River from the hillside opposite the current roadway is visible.
- **Changes to Visual Character:** From this viewpoint, the sweep of the new bridge across the river would be seen by those users in or along the river. The existing bridge would be removed and the new bridge would be taller, which has the effect of opening up the views under the bridge.
- **Anticipated Viewer Response:** As in the other views, it is anticipated that viewers would have a higher level of sensitivity to the visual environment, given the scenic nature of the canyon and the anticipation of higher scenic quality associated with that knowledge. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be noticeable, given that the existing bridge would be removed and a new wider and taller bridge added. The overall visual quality of the view is anticipated to decrease to moderate. Vividness would be reduced to moderately high and intactness and unity would be moderate.

Figure 32

**Viewpoint M-11, Merced River User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**

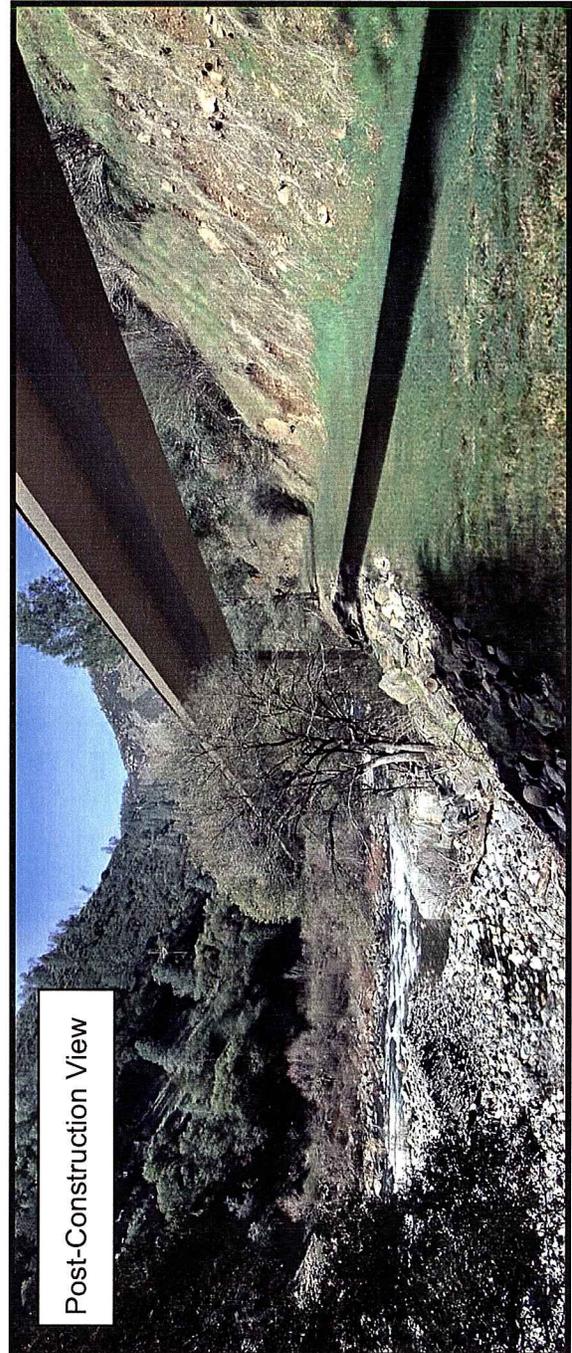
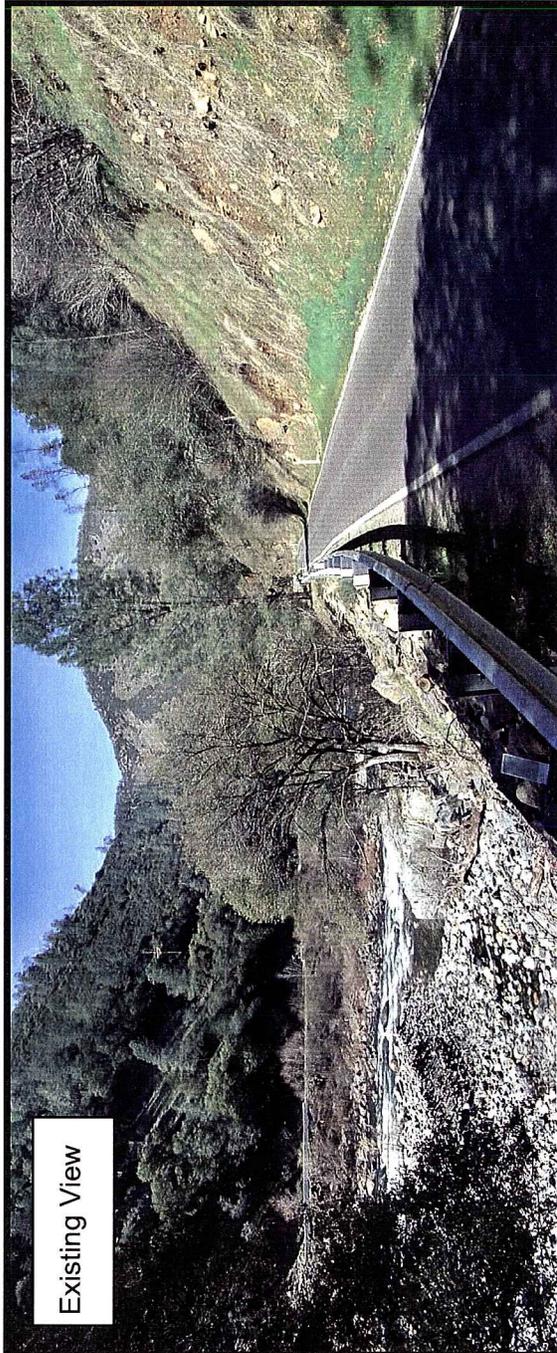


Key Viewpoint H-3, Trail User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 33.

- **Orientation:** The photo is taken to the north along the existing temporary bypass (Incline Road).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately high vividness, moderate intactness and moderate unity.
- **Proposed Project Features:** Under this Alternative, the bridge crossing the Merced River would be visible. The abutment wall would sit behind the viewer from this vantage point. The existing bypass guardrail would be removed.
- **Changes to Visual Character:** The bridge structure would be a new element in the view. The bridge and its abutment walls, plus the retaining wall between the two bridges (not visible in this view) introduce a built environment along this portion of the trail. However, the height of the bridge reduces the visual impact to some extent. The guardrail would be removed and the paving would remain for trail users.
- **Anticipated Viewer Response:** Hikers and mountain bike users of the trail would be anticipated to have a moderate to moderately high sensitivity to the visual environment; with locals having the greater sensitivity due to their familiarity.
- **Resulting Visual Impact:** The resulting visual impact is anticipated to be moderate to moderately low, given the removal of roadway elements and the inclusion of the bridge. Currently, this portion of Incline Road is off-limits to trail users since it is used as the temporary bypass. The opening of the trail with the new alignment would bring users back. The overall visual quality of the view would be reduced to moderately low, with moderate vividness, and moderately low intactness and unity.

Figure 33

**Viewpoint H-3, Hiker/Trail User Group
Viaduct Realignment Alternative (Alternative S)
with mitigation at 5 years post-completion**



4.3.4 Viaduct Realignment w/ Tied-Arch Bridge Alternative (Alternative S2-V1)

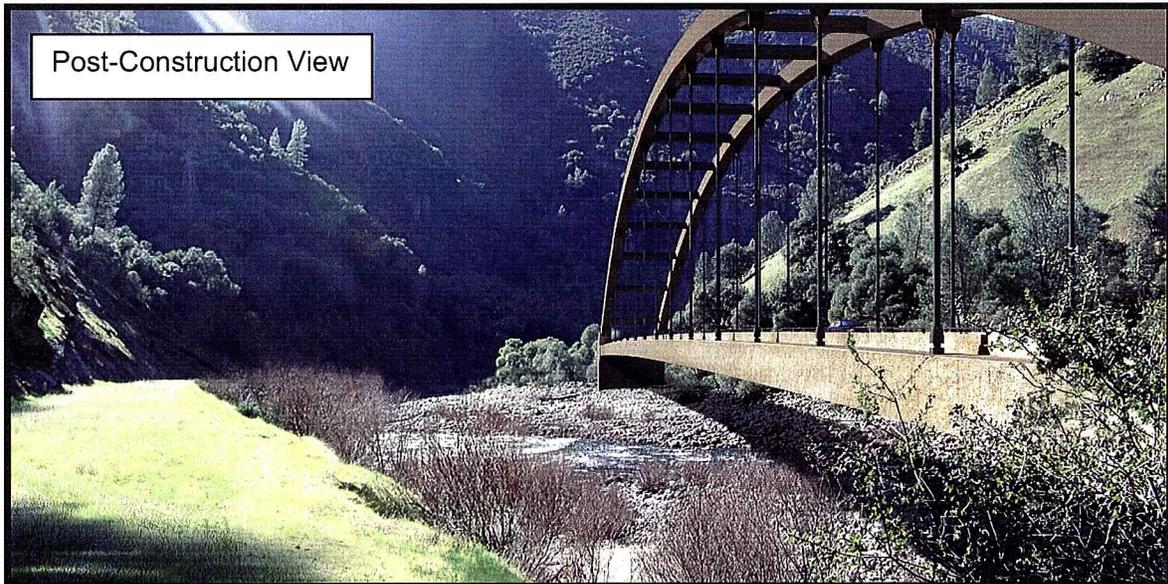
Alternative S2-V1 has five simulations – Key Viewpoints D-8, M-3, M-9, M-11, and H-2 – which demonstrate the changes to the proposed environment under this Alternative. H-2 is similar to H-3 used in the other simulations, but is further south of the H-3 viewpoint.

Key Viewpoint D-8, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 34.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with moderately-high vividness and intactness, and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge would cross the Merced River from the hillside opposite the current roadway. Given the proposed design style of the bridge, the new bridge would create a visual focal point in the landscape.
- **Changes to Visual Character:** From this viewpoint, the majority of the new structure would be visible. The structure would have a long span over the river, making the arches taller to accommodate the span. The existing temporary bridge would be removed, lessening the encroachment to the river.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would be very noticeable in the visual environment. The bridge would become a focal point in the landscape, given its scale and height. It is anticipated that the overall visual quality of this view would decrease to moderate, with moderately-high vividness, and moderate intactness and unity.

Figure 34

**Viewpoint D-8, Driver/Roadway User Group
Viaduct Realignment w/ Tied-arch Bridge Alternative
(Alternative S2-V1) with mitigation at 5 years post-completion**

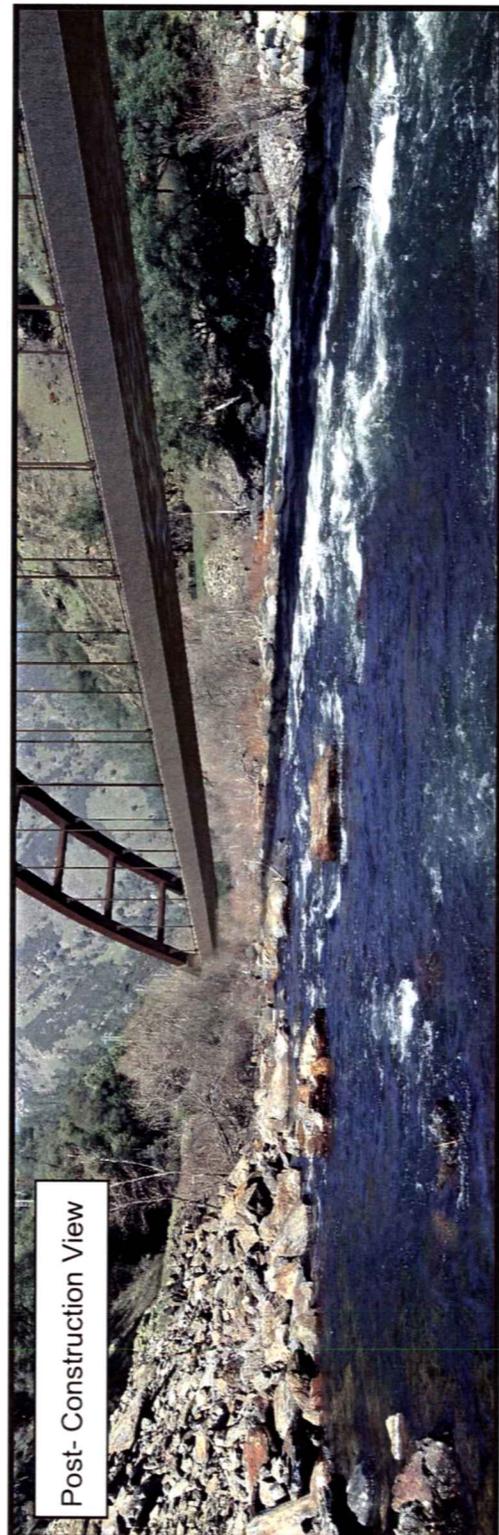
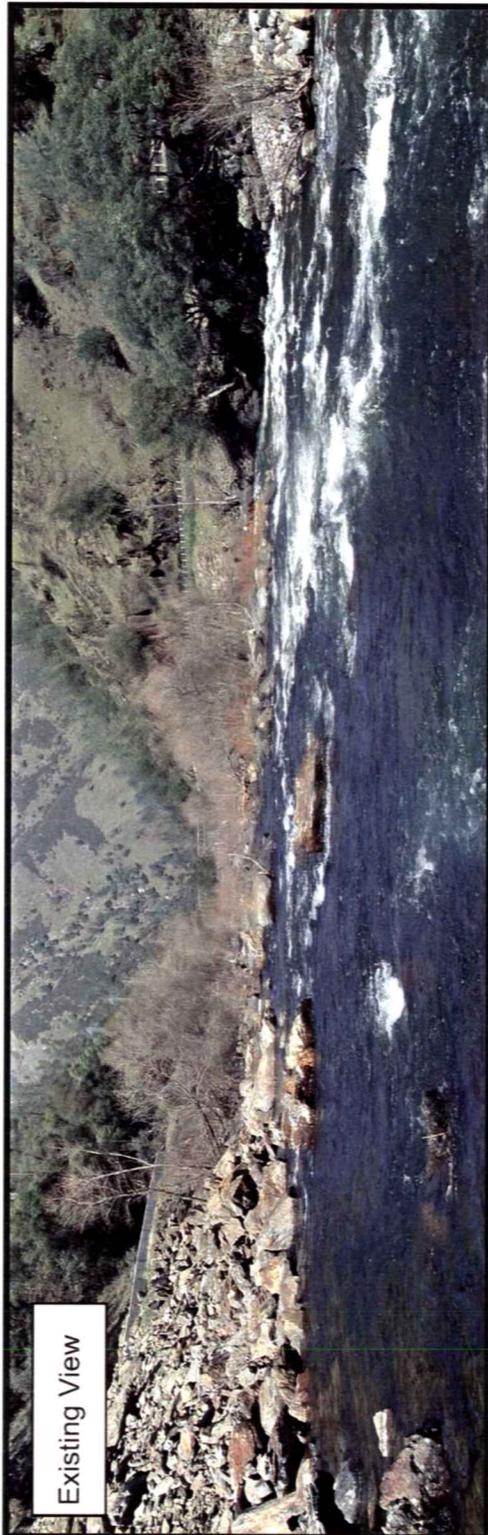


Key Viewpoint M-3, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 35.

- **Orientation:** The photo is taken to the north from the base of the Ferguson Rockslide (west bank of Merced River).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness and intactness, and moderately-high unity.
- **Proposed Project Features:** In the Viaduct Realignment Alternative, the bridge spanning the Merced River is the primary project feature visible in this view. The length of the span helps dictate the required height of the arch.
- **Changes to Visual Character:** From this viewpoint, the majority of the new structure would be visible. The structure would have a long span over the river, making the arches taller to accommodate the span. The existing temporary bridge (seen in the Existing View and partially screened by the vegetation) would be removed. The height of the new bridge would allow for more open views under the bridge.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** It is anticipated that the changes would be very noticeable in the visual environment. The bridge would become a focal point in the landscape, given its scale and height. It is anticipated that the overall visual quality of this view would decrease to moderate, with moderately-high vividness, and moderate intactness and unity.

Figure 35

**Viewpoint M-3, Merced River User Group
Viaduct Realignment w/ Tied-arch Bridge Alternative
(Alternative S2-V1) with mitigation at 5 years post-completion**

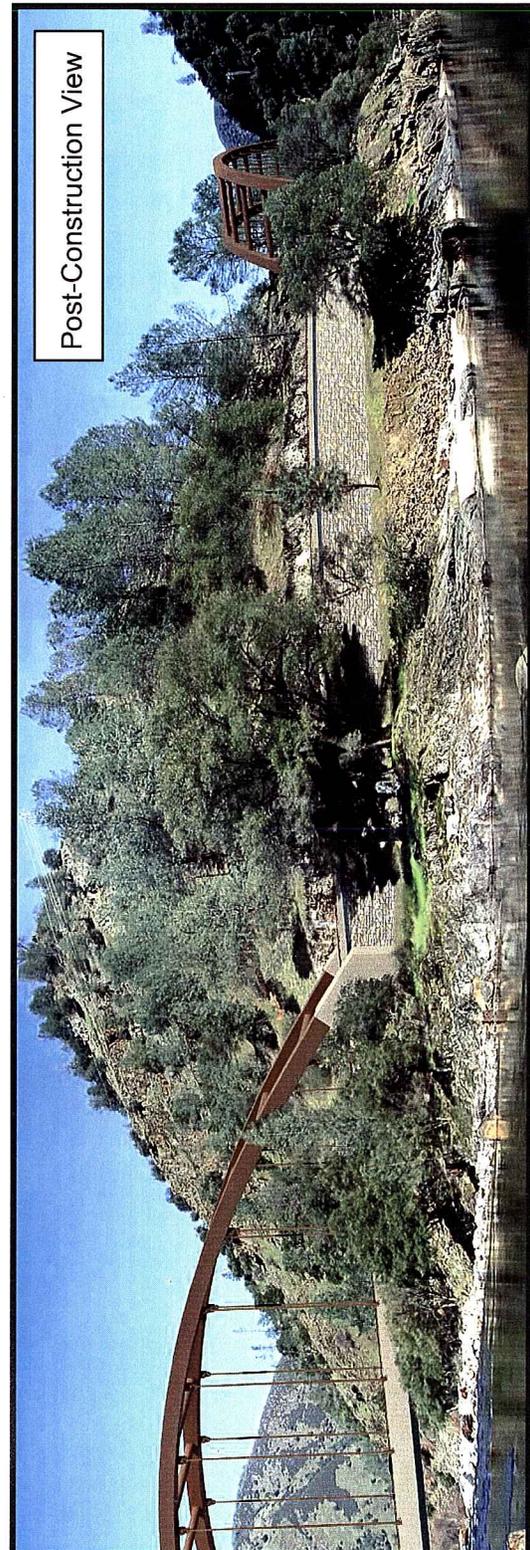
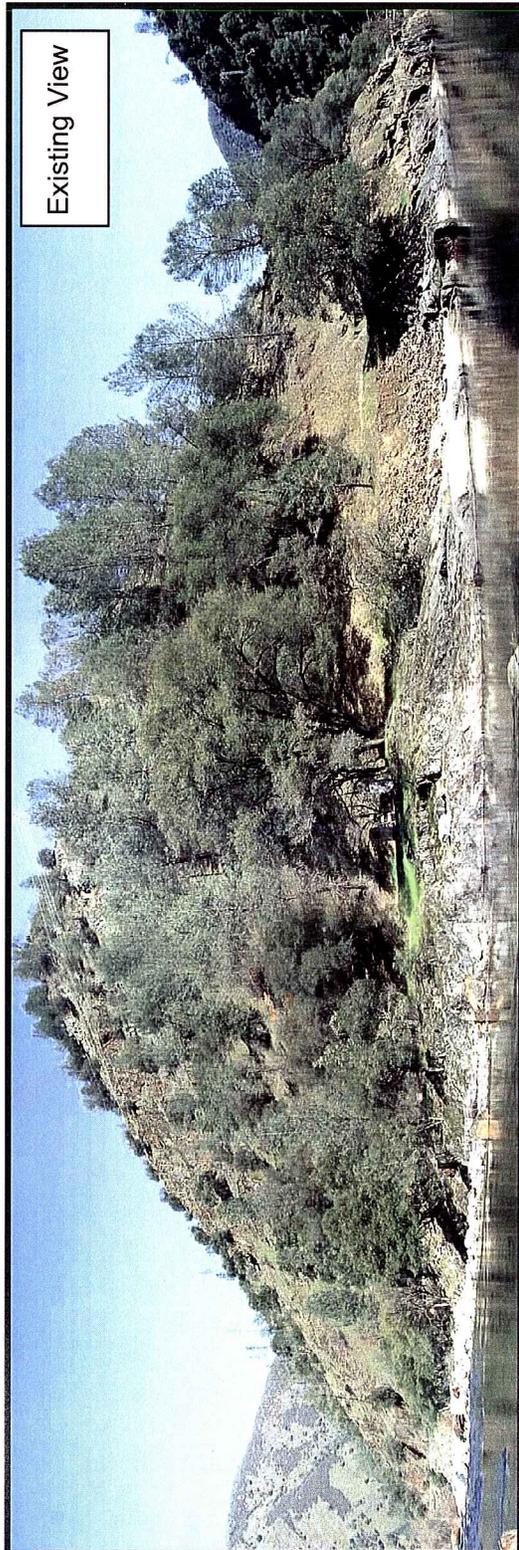


Key Viewpoint M-9, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 36.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking toward the hillside on the opposite bank of the river from the current highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness, intactness, and unity.
- **Proposed Project Features:** In this Alternative, both bridges and the portion of the highway on the retaining wall would be prominent to the viewer along the river.
- **Changes to Visual Character:** The two new tied-arch bridges would be visible in this viewpoint, along with the viaduct portion of the alignment above the retaining wall. It is anticipated that some of the existing vegetation could remain along the river, which would help to break up the views to the viaduct.
- **Anticipated Viewer Response:** It is anticipated that viewers would have a higher level of sensitivity to the visual environment, given the scenic nature of the canyon and the anticipation of higher scenic quality associated with that knowledge. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable. The bridges, wall, and new roadway would be prominent additions to the view. It is anticipated that the resulting visual impact would decrease the existing overall visual quality to moderately-high with high vividness, and moderately-high intactness and unity.

Figure 36

**Viewpoint M-9, Merced River User Group
Viaduct Realignment w/ Tied-arch Bridge Alternative
(Alternative S2-V1) with mitigation at 5 years post-completion**

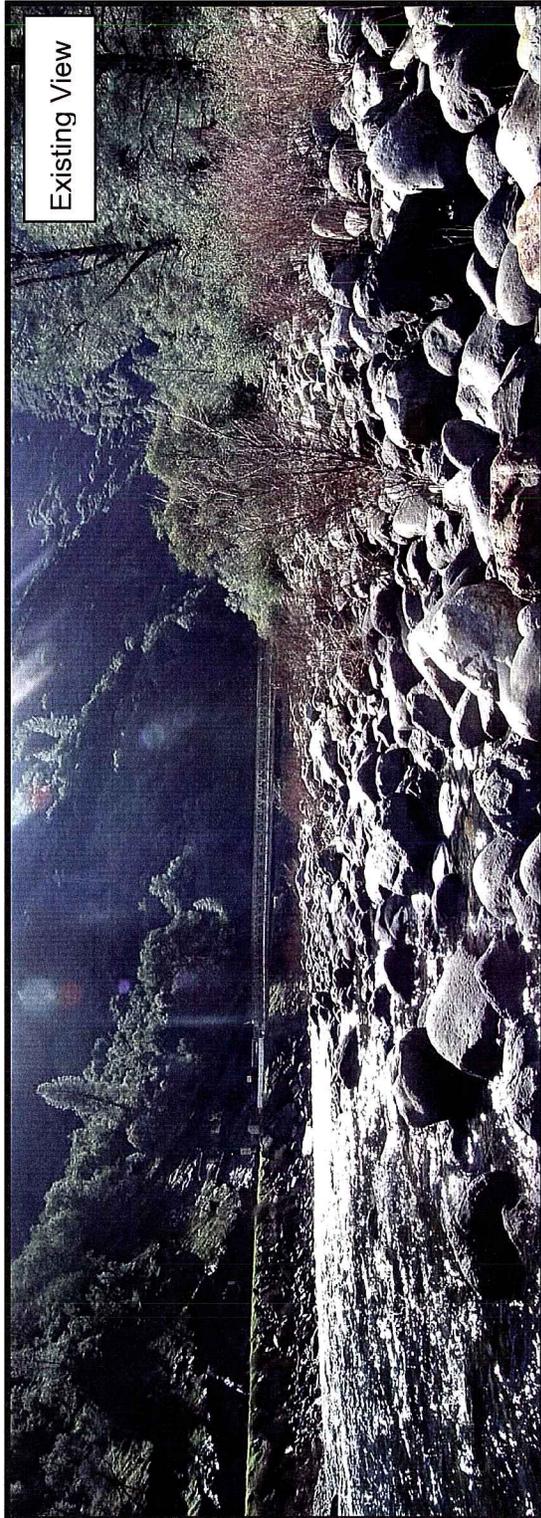


Key Viewpoint M-11, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 37.

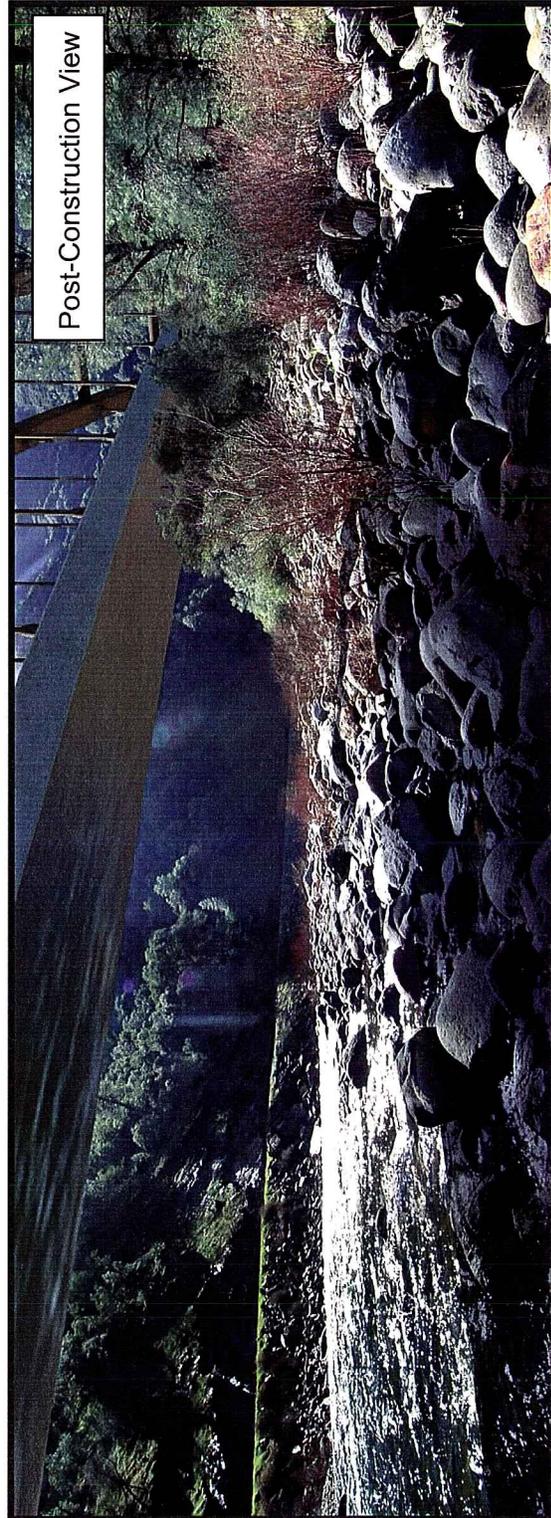
- **Orientation:** The photo is taken to the west from the north bank of the Merced River.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with high vividness, moderately-high intactness and unity.
- **Proposed Project Features:** The new bridge would span the Merced River. In this view, the new abutment for the bridge would be constructed behind the existing vegetation.
- **Changes to Visual Character:** From this viewpoint, the span of the new bridge across the river would be seen by those users in or along the river. The length of the bridge would require a large arch, creating a focal point in the landscape. The existing bridge would be removed and the new higher bridge should open the river from encroachment created by the temporary bridge.
- **Anticipated Viewer Response:** As in the other views, it is anticipated that viewers would have a higher level of sensitivity to the visual environment, given the scenic nature of the canyon and the anticipation of higher scenic quality associated with that knowledge. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable, given that the existing bridge would be removed and a wider and taller bridge would be added. The overall visual quality of the view is anticipated to remain moderately-high, with moderately-high vividness, and moderate intactness and unity.

Figure 37

**Viewpoint M-11, Merced River User Group
Viaduct Realignment w/ Tied-arch Bridge Alternative
(Alternative S2-V1) with mitigation at 5 years post-completion**



Existing View



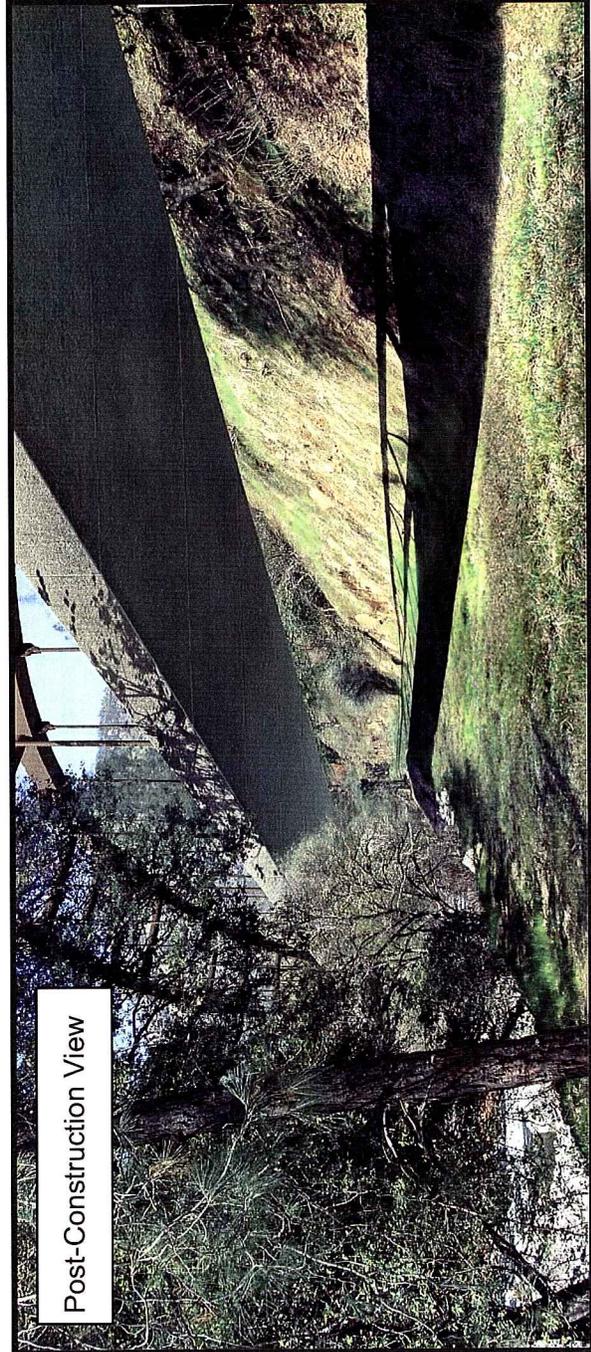
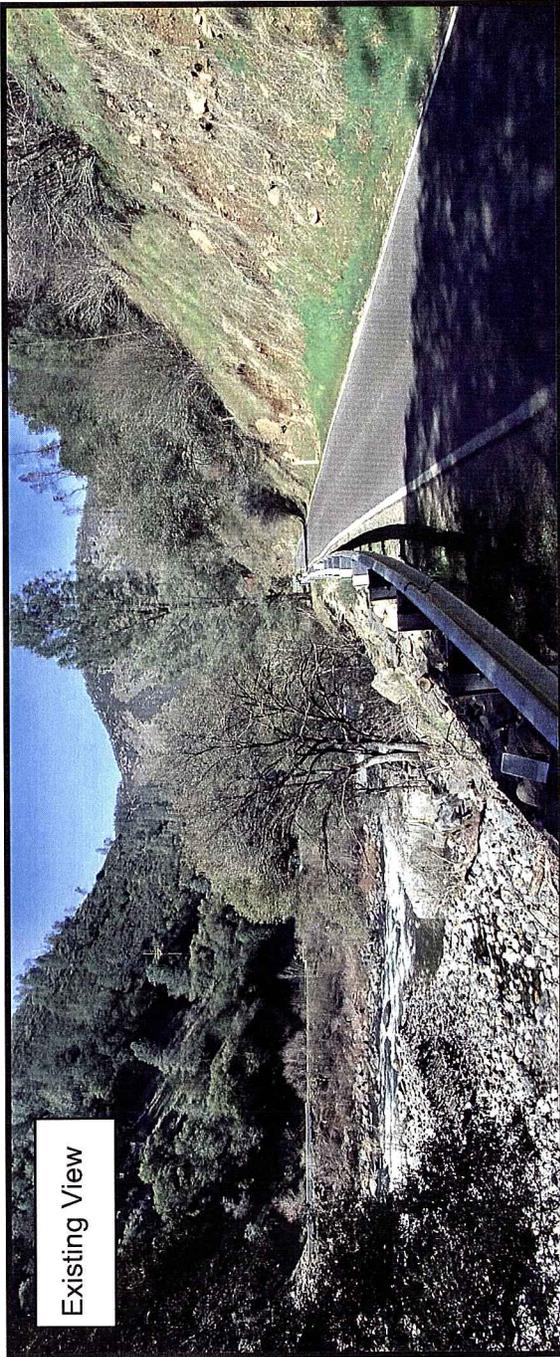
Post-Construction View

Key Viewpoint H-2, Hiker/Trail User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 38.

- **Orientation:** The photo is taken to the north along the existing temporary bypass (Incline Road).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately-high vividness, moderate intactness and unity.
- **Proposed Project Features:** Under this Alternative, the bridge crossing the Merced River would be nearly overhead. The length of the bridge would indicate a high arch to the bridge, which should translate into the bridge being a focal point in the landscape. In this view, the abutment for the bridge is located just behind the viewer.
- **Changes to Visual Character:** From this viewpoint, the span of the new bridge across the river would be seen by those users in or along the river. The length of the bridge would require a large arch, creating a focal point in the landscape.
- **Anticipated Viewer Response:** Hikers and mountain bike users of the trail would be anticipated to have a moderate to moderately-high sensitivity to the visual environment; with local users having the greater sensitivity due to their familiarity.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable, given that the existing bridge would be removed and a wider and taller bridge added. The overall visual quality of the view is anticipated to remain moderate, with moderate vividness, intactness, and unity.

Figure 38

**Viewpoint H-2, Hiker/Trail User Group
Viaduct Realignment w/ Tied-Arch Bridge Alternative
(Alternative S2-V1) with mitigation at 5 years post-construction**



4.3.5 Viaduct Realignment w/ Slant Leg Bridge Alternative (Alternative S2-V2)

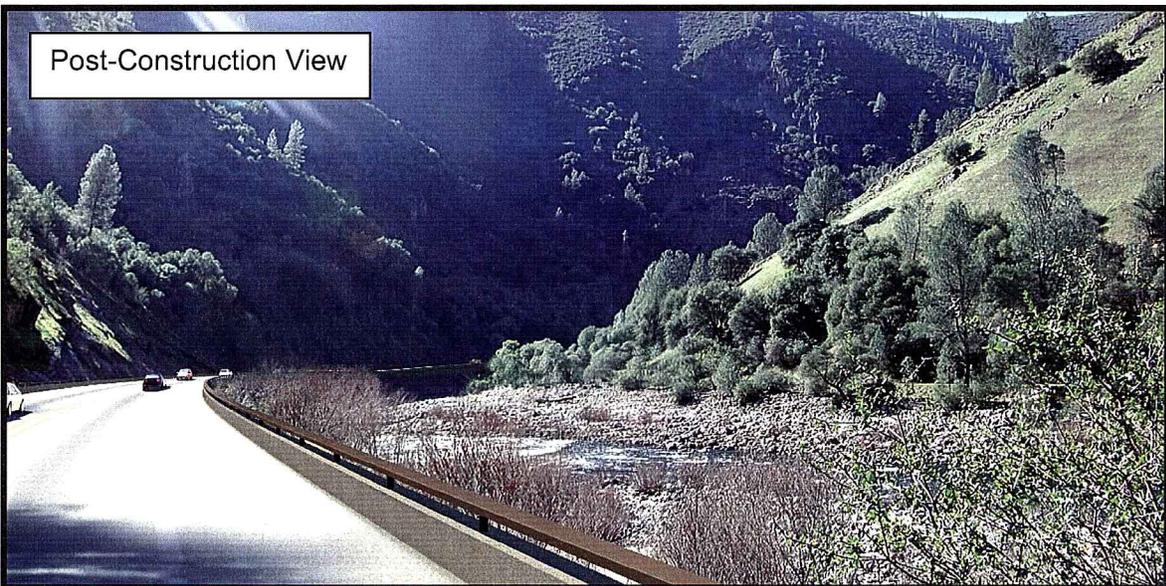
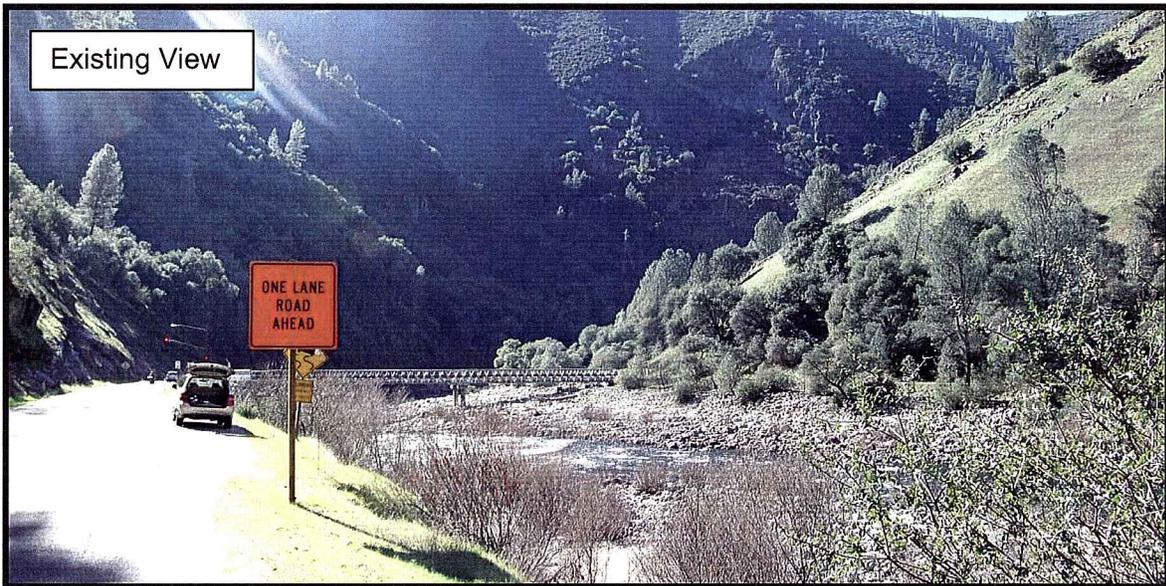
Alternative S2-V2 has five simulations – Key Viewpoints D-8, M-3, M-9, M-11, and H-2 – which demonstrate the changes to the proposed environment under this Alternative.

Key Viewpoint D-8, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 39.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with moderately-high vividness and intactness, and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge would cross the Merced River in the mid- to background of this view. Given the proposed design style of the bridge, the new bridge would create a visual focal in the landscape as the traveler approached closer to it.
- **Changes to Visual Character:** From this viewpoint, only a small portion of the proposed bridge structure would be visible. The existing temporary bridge would be removed lessening the encroachment to the river.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would be very noticeable in the visual environment. The bridge would become a focal point in the landscape. It is anticipated that the overall visual quality of this view would decrease to moderate, with moderately-high vividness, and moderate intactness and unity.

Figure 39

**Viewpoint D-8, Driver/Roadway User Group
Viaduct Realignment w/ Slant Leg Bridge Alternative
(Alternative S2-V2) with mitigation at 5 years post-completion**

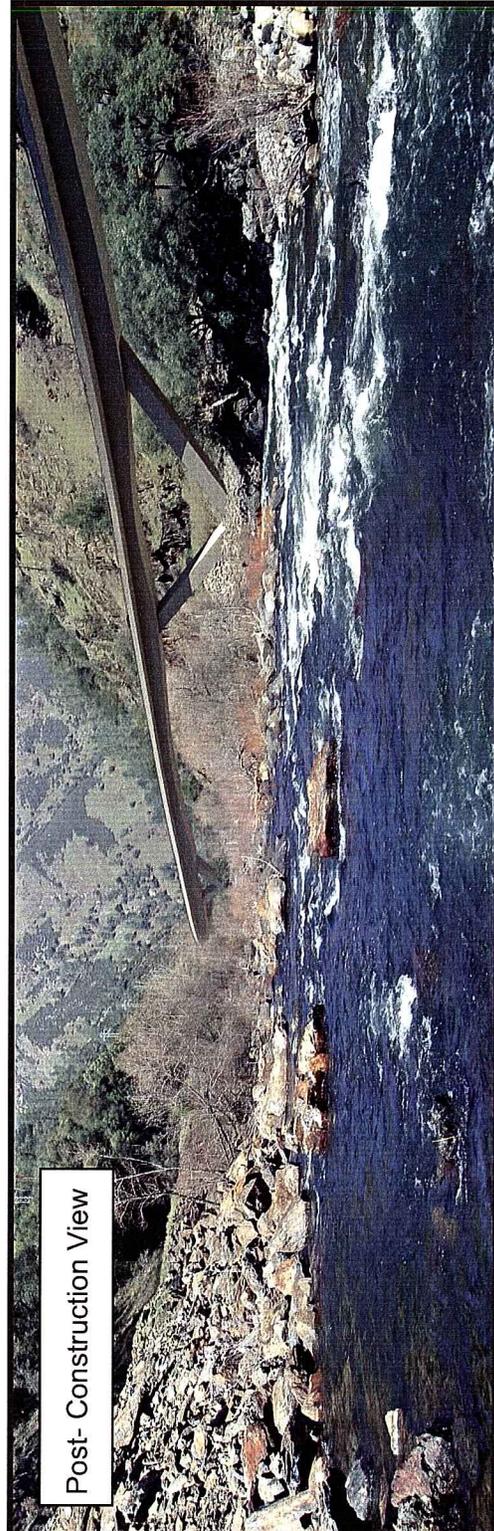


Key Viewpoint M-3, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 40.

- **Orientation:** The photo is taken to the north from the base of the Ferguson Rockslide (west bank of Merced River).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness and intactness, and moderately-high unity.
- **Proposed Project Features:** In the S2-V2 Alternative, the bridge spanning the Merced River is the primary project feature visible in this view.
- **Changes to Visual Character:** From this viewpoint, the majority of the new structure would be visible. The new bridge would have a focal character in the landscape. The existing temporary bridge seen in the background and partially screened by the vegetation would be removed. The height of the new bridge would allow for more open views under the bridge.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** It is anticipated that the changes would be very noticeable in the visual environment. The bridge would become a focal point in the landscape, given its scale and aesthetics. It is anticipated that the overall visual quality of this view would decrease to moderate, with moderately-high vividness, and moderate intactness and unity.

Figure 40

**Viewpoint M-3, Merced River User Group
Viaduct Realignment w/ Slant Leg Bridge Alternative
(Alternative S2-V2) with mitigation at 5 years post-completion**

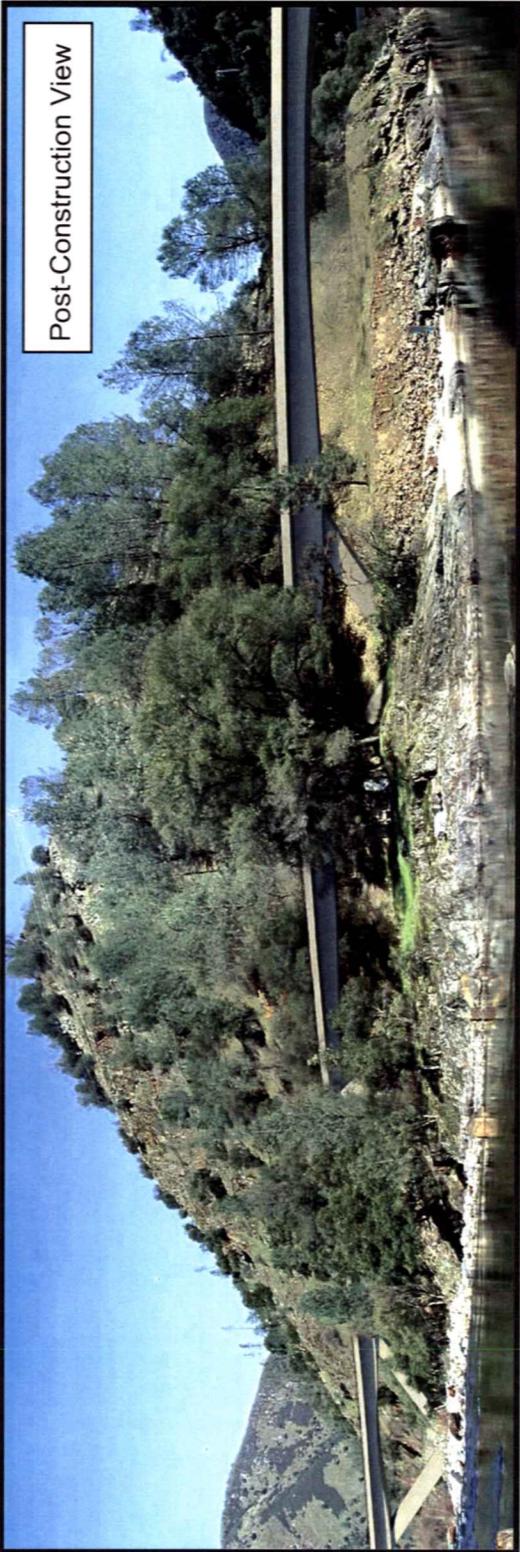
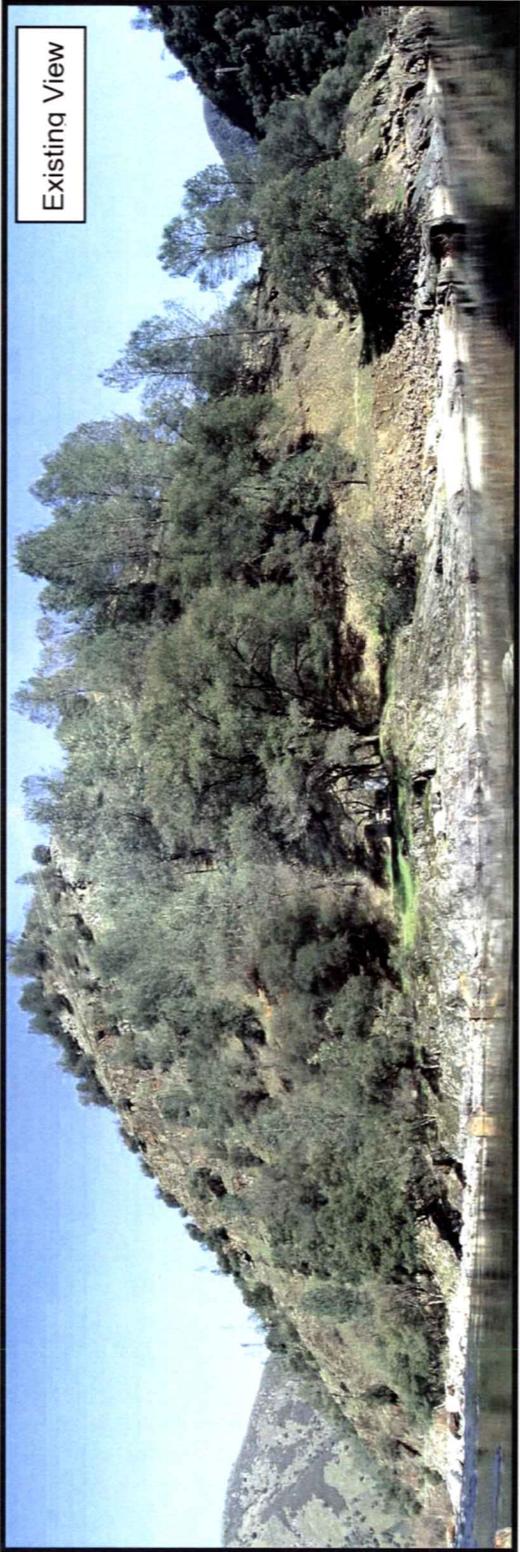


Key Viewpoint M-9, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 41.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking toward the hillside on the opposite bank of the river from the current highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness, intactness, and unity.
- **Proposed Project Features:** In this Alternative, both bridges and the portion of the highway on the retaining wall would be prominent to the viewer along the river.
- **Changes to Visual Character:** The two new bridges would be visible in this viewpoint along with the viaduct portion of the alignment above the retaining wall, depending on the extent that vegetation along the river is preserved. It is anticipated that some of the existing vegetation could remain along the river which would help to break up the views to viaduct.
- **Anticipated Viewer Response:** It is anticipated that viewers would have a higher level of sensitivity to the visual environment, given the scenic nature of the canyon and the anticipation of higher scenic quality associated with that knowledge. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable. The bridges, wall and new roadway would be prominent additions to the view. It is anticipated that the resulting visual impact would decrease the existing overall visual quality to moderately-high with high vividness, and moderately-high intactness and unity.

Figure 41

**Viewpoint M-9, Merced River User Group
Viaduct Realignment Alternative (Alternative S-2)
with mitigation at 5 years post-completion**

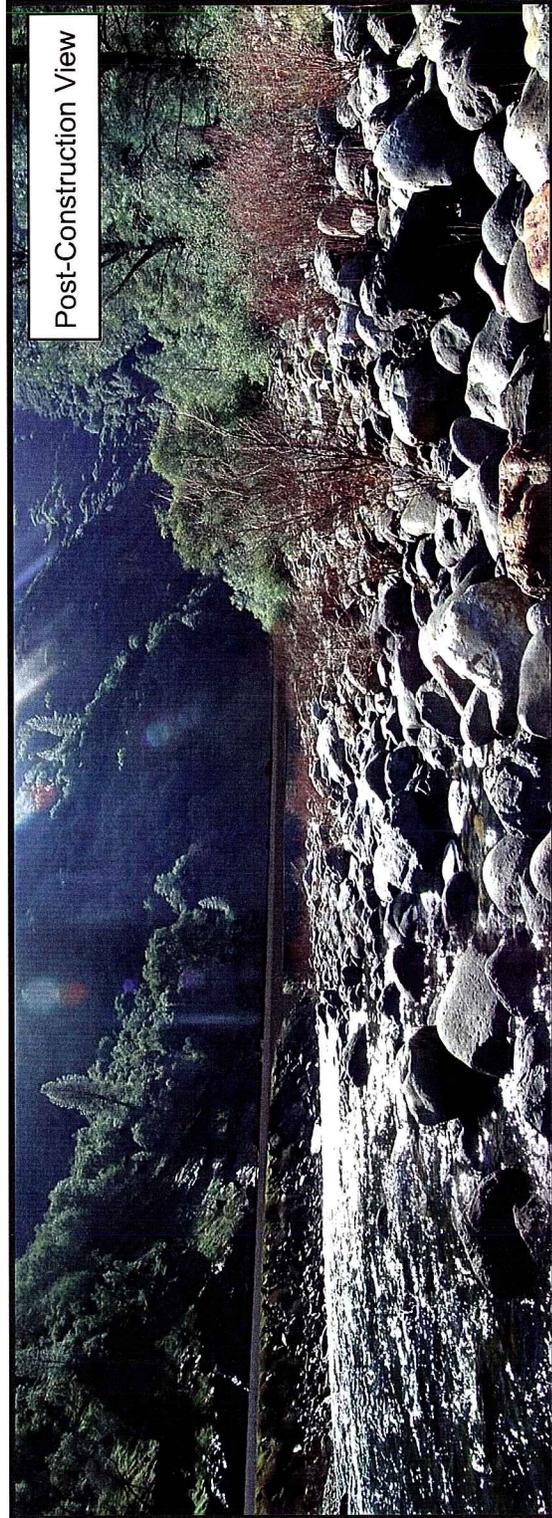
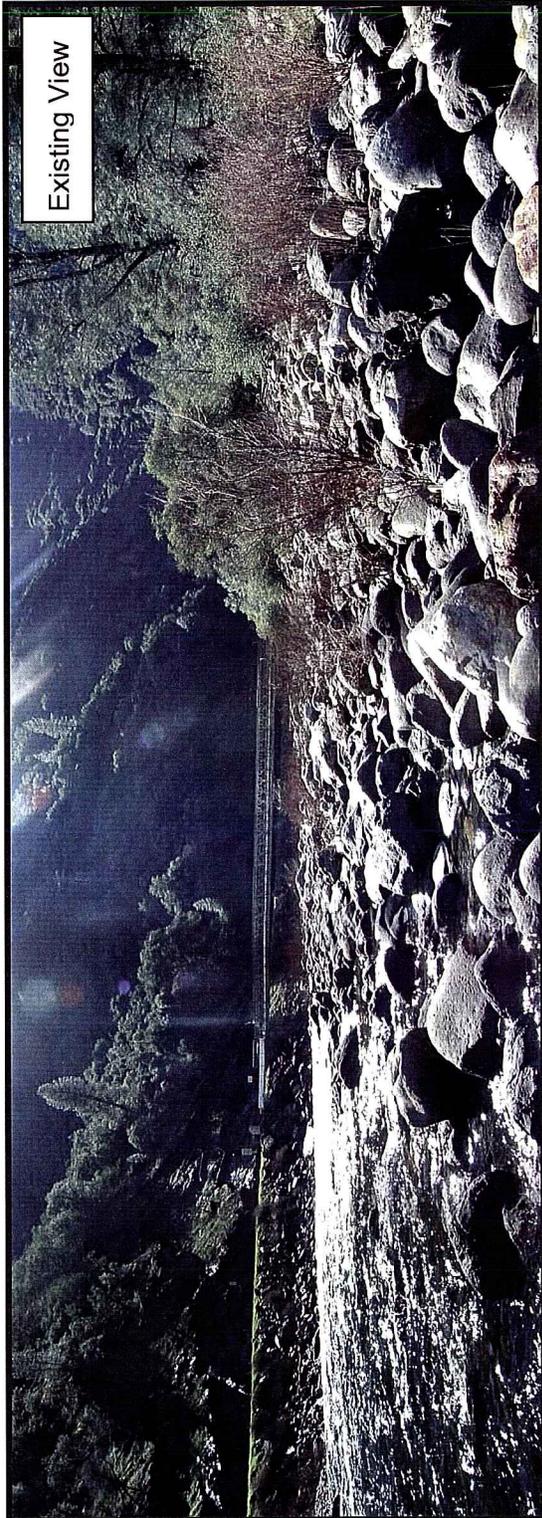


Key Viewpoint M-11, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 42.

- **Orientation:** The photo is taken to the west from the north bank of the Merced River.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with high vividness, moderately-high intactness and unity.
- **Proposed Project Features:** The new bridge would span the Merced River in the mid-ground.
- **Changes to Visual Character:** From this viewpoint, the span of the new bridge across the river would be seen by those users in or along the river. The existing bridge would be removed and the new higher bridge should open the river from encroachment created by the temporary bridge.
- **Anticipated Viewer Response:** As in the other views, it is anticipated that viewers would have a higher level of sensitivity to the visual environment, given the scenic nature of the canyon and the anticipation of higher scenic quality associated with that knowledge. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable, given that the existing bridge would be removed and a new wider and taller bridge would be added. The overall visual quality of the view is anticipated remain moderately-high, with moderately-high vividness, and moderate intactness and unity.

Figure 42

**Viewpoint M-11, Merced River User Group
Viaduct Realignment w/ Truss or Tied-arch Bridge Alternative
(Alternative S-2) with mitigation at 5 years post-completion**

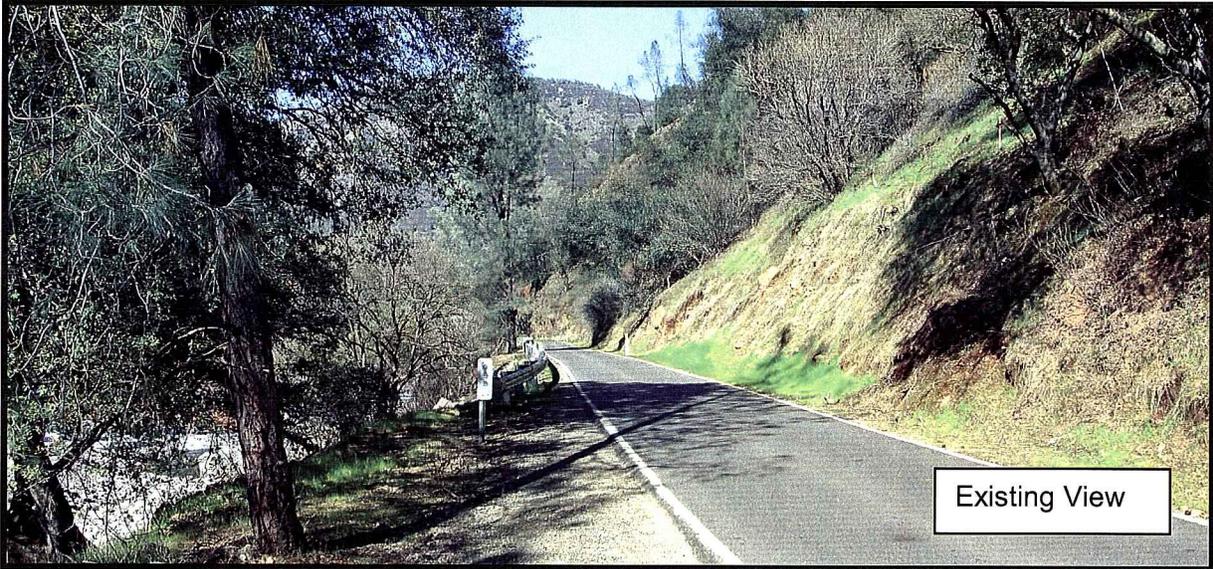


Key Viewpoint H-2, Hiker/Trail User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 43.

- **Orientation:** The photo is taken to the north along the existing temporary bypass (Incline Road).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately-high vividness, moderate intactness and unity.
- **Proposed Project Features:** Under this Alternative, the short viaduct section is clearly visible as are portions of the two bridges
- **Changes to Visual Character:** From this viewpoint, both the viaduct and portions of the two bridge spans across the river would be seen by those users in or along the river. Elements of the existing temporary bypass would be removed, which would improve the character of the view.
- **Anticipated Viewer Response:** Hikers and mountain bike users of the trail would be anticipated to have a moderate to moderately-high sensitivity to the visual environment; with locals having the greater sensitivity due to their familiarity.
- **Resulting Visual Impact:** The resulting visual impact from this viewpoint is anticipated to be very noticeable, given the placement of the viaduct along the trail, although this is a relatively small section. The overall visual quality of the view is anticipated to remain moderate, with moderate vividness, intactness, and unity.

Figure 43

**Viewpoint H-2, Merced River User Group
Viaduct Realignment w/ Truss or Tied-arch Bridge Alternative
(Alternative S-2) with mitigation at 5 years post-completion**



4.3.6 Northerly Tunnel Realignment Alternative (Alternative T)

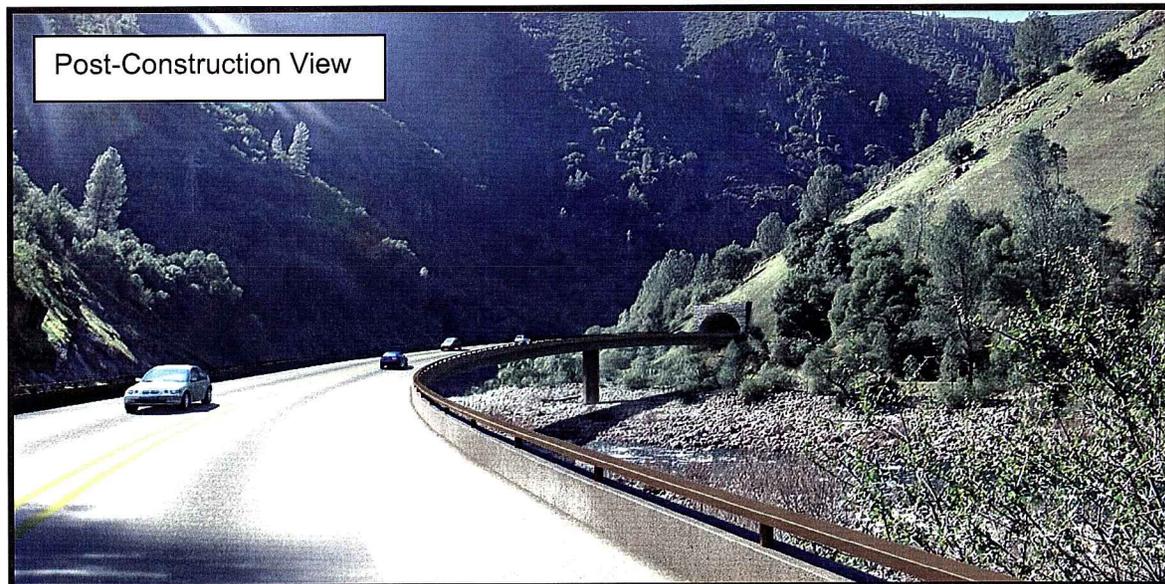
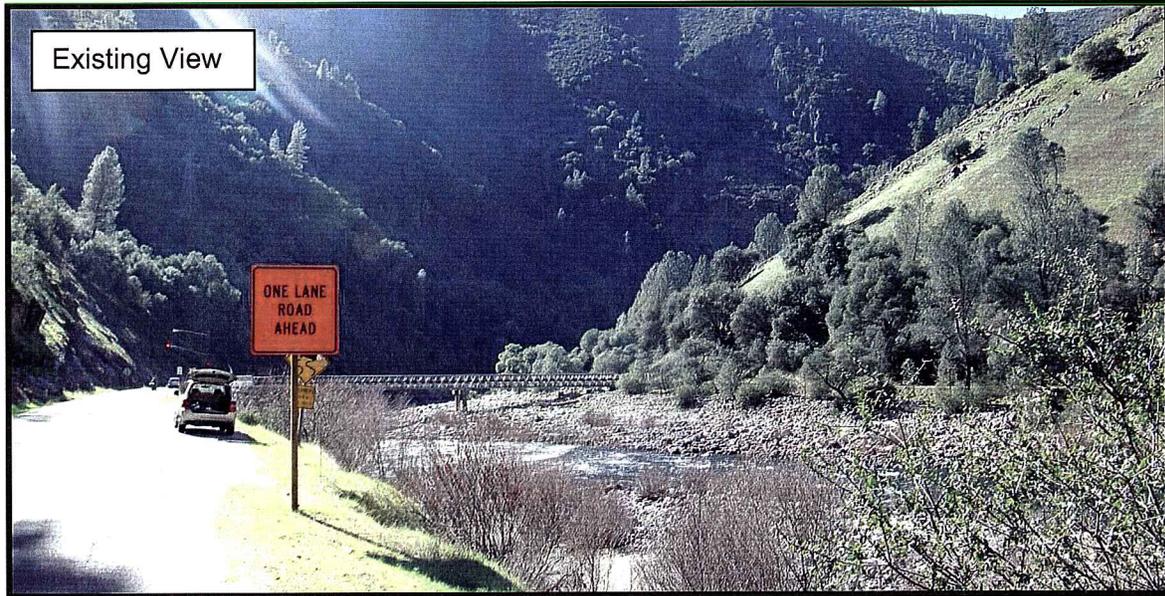
For the tunnel realignment Alternative, Key Viewpoints D-8, D-10, M-3, M-9, M-11, and H-3 apply. Since the alignment for this Alternative is the same as Alternative C and the primary difference between the two is a tunnel instead of the open cut, the simulations shown for M-11 and H-3 would be the same as shown in Alternative C. Photo simulations for D-8, D-10, M-3 and M-9 are discussed below.

Key Viewpoint D-8, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 44.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high, with moderately-high vividness and intactness, and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge would cross the Merced River from the hillside opposite the current roadway. In addition, the tunnel portal in the hillside opposite existing SR-140 would also be visible.
- **Changes to Visual Character:** As in Alternative C, the new bridge sweeps across the Merced River; but instead of the visually prominent cut slope on the hillside, a tunnel portal is located in the hillside. The portal adds a man-made element to the hillside where none currently exists, but the impact is small and may be partially screen by vegetation along the river. The existing temporary bridge would be removed.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment. Vegetation along the river would help screen some of these changes.
- **Resulting Visual Impact:** The impact associated with Alternative T from this vantage point is anticipated to be noticeable. The roadway section would include wider shoulders than the current roadway, but this is not anticipated to have a large impact on the quality of the views for the roadway traveler. The overall visual quality of the view would remain moderately-high with high vividness, and moderate intactness and unity.

Figure 44

**Viewpoint D-8, Driver/Roadway User Group
Tunnel Realignment Alternative (Alternative T)
with mitigation at 5 years post-completion**



Key Viewpoint D-10, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 45.

- **Orientation:** The photo is taken looking south along the existing SR-140 highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately-high vividness, moderately-low intactness, and moderate unity.
- **Proposed Project Features:** Under this Alternative, a bridge across the Merced River would be seen in the foreground. The tunnel portal would be seen in the opposite hillside.
- **Changes to Visual Character:** The most visible change to the environment would be the inclusion of the new bridge and tunnel portal in place of the temporary bridge and Incline Road bypass. A wider roadway section would be associated with the new roadway.
- **Anticipated Viewer Response:** Viewer sensitivity is expected to be moderate to high given the scenic nature of the corridor. Regular travelers and residents would be the most sensitive to the changes, while tourists and infrequent travelers would likely be less sensitive due to their unfamiliarity with the corridor.
- **Resulting Visual Impact:** Changes to the visual environment from this viewpoint are expected to be very noticeable, given the sweep of the new bridge in the view of the roadway travelers. Construction of the Alternative would remove a number of encroaching elements associated with the road closure. The overall visual quality of this view would increase to moderately-high with high vividness, and moderately-high intactness and unity.

Figure 45

**Viewpoint D-10, Driver/Roadway User Group
Tunnel Realignment Alternative (Alternative T)
with mitigation at 5 years post-completion**

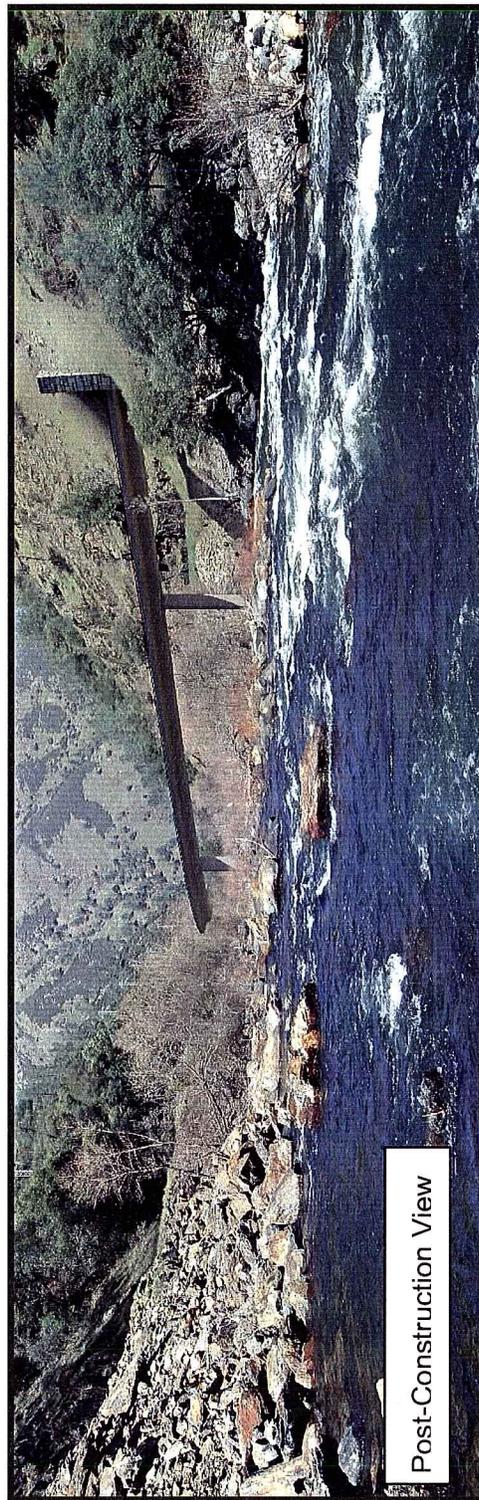
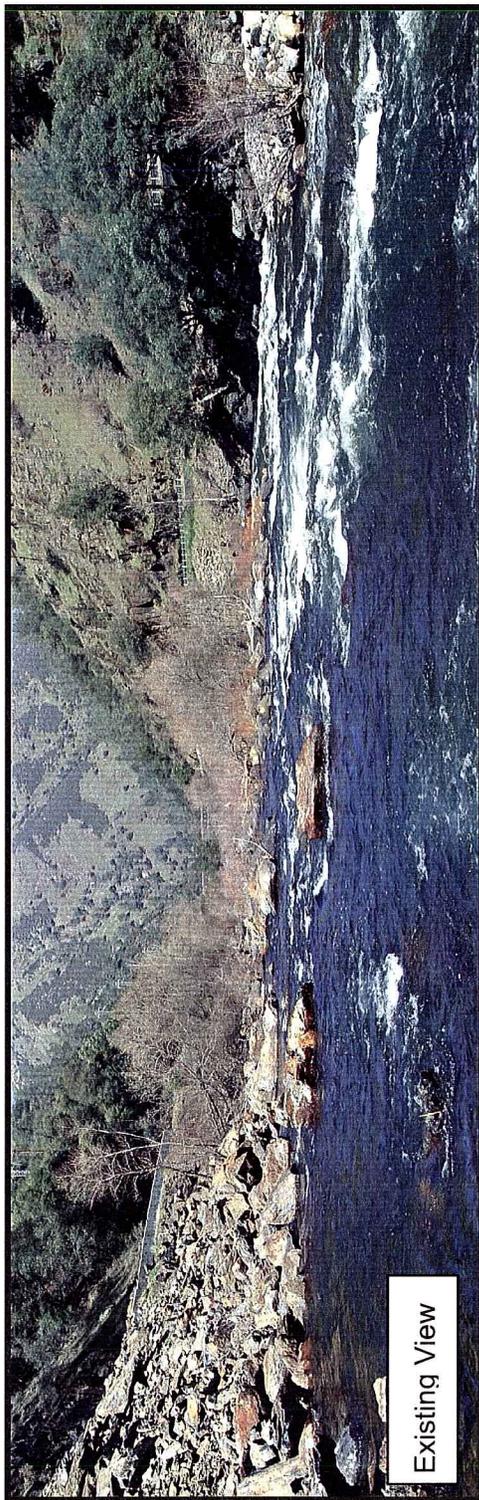


Key Viewpoint M-3, Merced River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 46.

- **Orientation:** The photo is taken to the north from the base of the Ferguson Rockslide (west bank of Merced River).
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness and intactness, and moderately-high unity.
- **Proposed Project Features:** In the Viaduct Realignment Alternative, the bridge spanning the Merced River can be seen.
- **Changes to Visual Character:** From this viewpoint, the sweep of the new bridge across the river would be seen by those users in or along the river. The existing temporary bridge would be removed (seen at a distance in this view and partially screened by the vegetation), and the new bridge would be taller than the existing bridge, which has the effect of opening up the views under the bridge.
- **Anticipated Viewer Response:** As in the other views, it is anticipated that viewers would have a moderate level of sensitivity to the visual environment. Those most familiar with the area would be more sensitive to the changes than those experiencing it for the first time.
- **Resulting Visual Impact:** From this viewpoint, it is anticipated that the changes would have a very noticeable impact to the visual environment. It is anticipated that the visual quality of this view would be reduced to moderately-high, with high vividness and moderately-high intactness and unity.

Figure 46

**Viewpoint M-3, Driver/Roadway User Group
Tunnel Realignment Alternative (Alternative T)
with mitigation at 5 years post-completion**



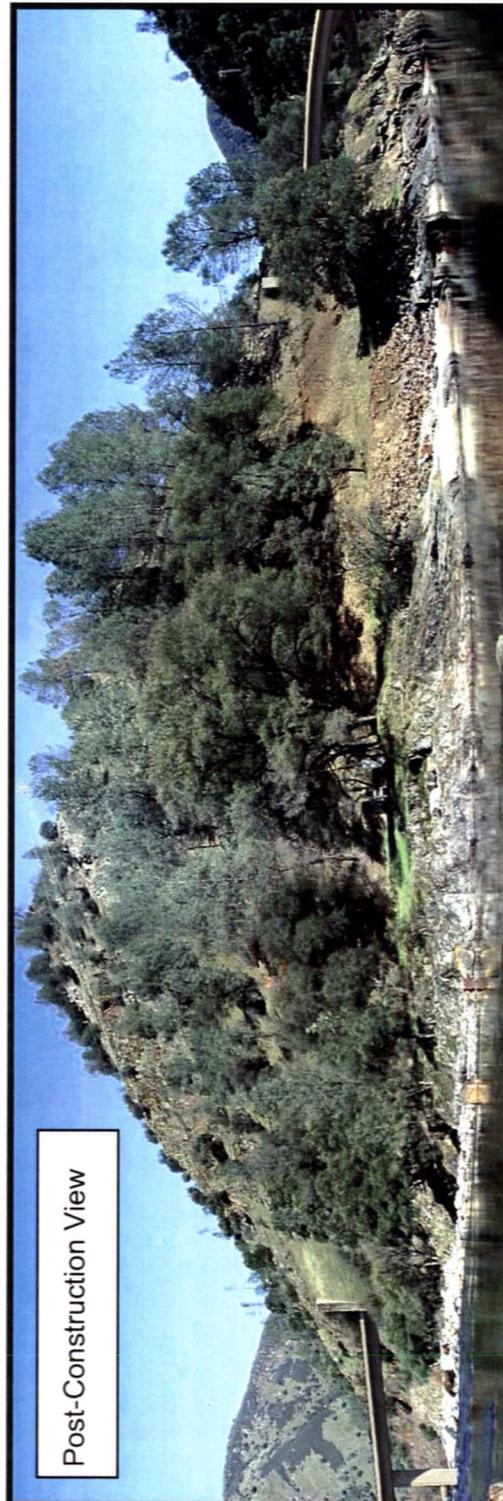
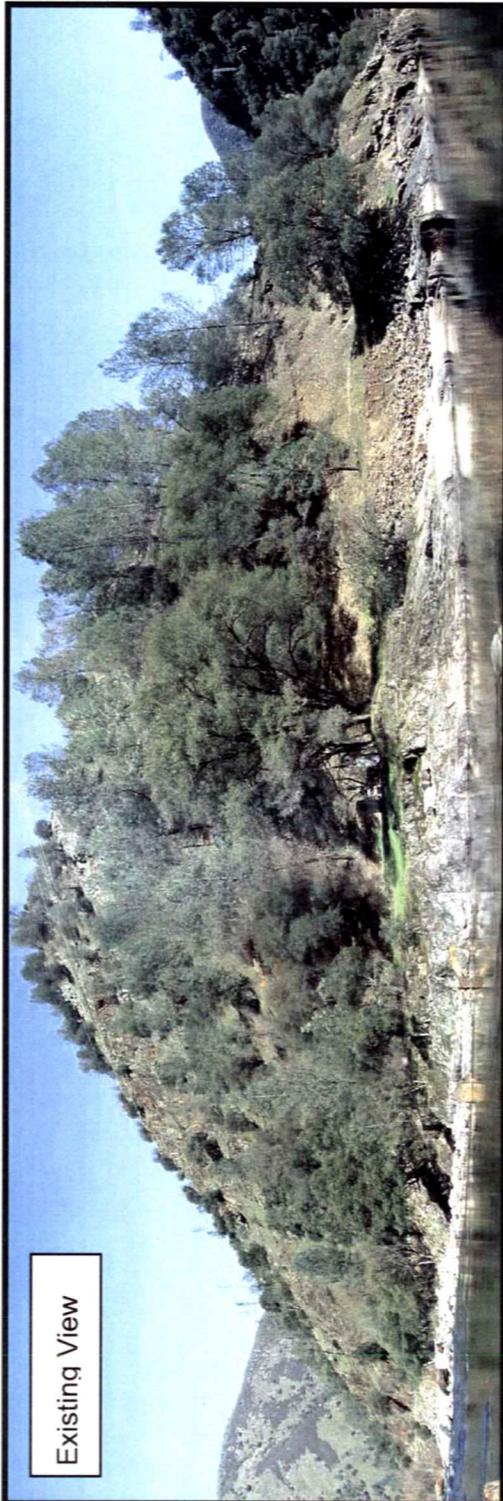
Key Viewpoint M-9, River User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 47.

- **Orientation:** The photo is taken to the north from the south bank of the Merced River looking toward the hillside on the opposite bank of the river from the current highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered high, with high vividness, intactness, and unity.
- **Proposed Project Features:** In Alternative T, the two bridges that cross the Merced River and their abutment and wing walls can be seen. The tunnel portals can also be seen obliquely in this view.
- **Changes to Visual Character:** Changes in this view would be the inclusion of the abutment and wing walls associated with the two bridges. These add hard elements where none currently exist on the hillside. Vegetation on the lower slope helps to mask some of the elements.
- **Anticipated Viewer Response:** It is anticipated that viewers along the river would be moderately sensitive to the changes in the visual environment.

Resulting Visual Impact: From this viewpoint, it is anticipated that the changes would have a noticeable impact to the visual environment. It could be anticipated that the overall visual quality of the view might lower slightly to moderately-high. However, the vividness of the view should remain high, while the intactness and unity would likely decrease to moderately-high.

Figure 47

**Viewpoint M-9, Driver/Roadway User Group
Tunnel Realignment Alternative (Alternative T)
with mitigation at 5 years post-completion**



4.3.7 Tunnel Realignment under Slide Alternative (Alternative T-3)

There are two viewpoints that have a view to the proposed changes in the Tunnel under Slide Alternative – D-9 and D-10.

Key Viewpoint D-9, Driver/Roadway User Group: A photo simulation of the proposed changes in this key view can be seen in Figure 48.

- **Orientation:** The photo is taken to the west along the Merced River from the shoulder of the existing SR-140 highway. The view is closer to the rockslide area than the D-8 viewpoint.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderately high with a high vividness, and a moderately high rating for both intactness and unity.
- **Proposed Project Features:** The proposed tunnel portal would be the most noticeable new element in the landscape.
- **Changes to the Visual Character:** The proposed tunnel portal would be prominent in the mid-ground of the view. The portal encroachment into the landscape is in a relatively small area within the view, which limits its impacts.
- **Anticipated Viewer Response:** It is anticipated that viewers driving along the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** The impact of the tunnel portal associated with this Alternative from this vantage point would be anticipated to be noticeable but not prominent in the landscape. It is anticipated that the overall visual quality would remain approximately the same as the existing.

Figure 48

**Viewpoint D-9, Driver/Roadway User Group
Tunnel Realignment under Slide Alternative (Alternative T-3)
with mitigation at 5 years post-completion**



Key Viewpoint D-10, Driver/Roadway User Group: A photo simulation of the proposed changes in this Key Viewpoint can be seen in Figure 49.

- **Orientation:** The photo is taken to the south along the existing SR-140 Highway alignment.
- **Existing Visual Character/Quality:** The existing visual quality in this view is considered moderate, with moderately-high vividness, moderately-low intactness and moderate unity.
- **Proposed Project Features:** The proposed tunnel portal would be the most noticeable new element in the landscape.
- **Changes to Visual Character:** The proposed tunnel portal would be prominent in the mid-ground of the view. The portal encroachment into the landscape is in a relatively small area within the zone of the project, which limits its impacts.
- **Anticipated Viewer Response:** It is anticipated that viewers driving alongside the river would be moderately sensitive to the changes in the visual environment.
- **Resulting Visual Impact:** The impact of the tunnel portal associated with this Alternative from this vantage point is anticipated be noticeable but not overwhelming in the landscape. The project would also remove a number of encroaching elements present in this view associated with the road closure. It is anticipated that the overall visual quality would increase to high with high vividness, and moderately-high intactness and unity.

Figure 49

**Viewpoint D-10, Driver/Roadway User Group
Tunnel Realignment under Slide Alternative (Alternative T-3)
with mitigation at 5 years post-completion**

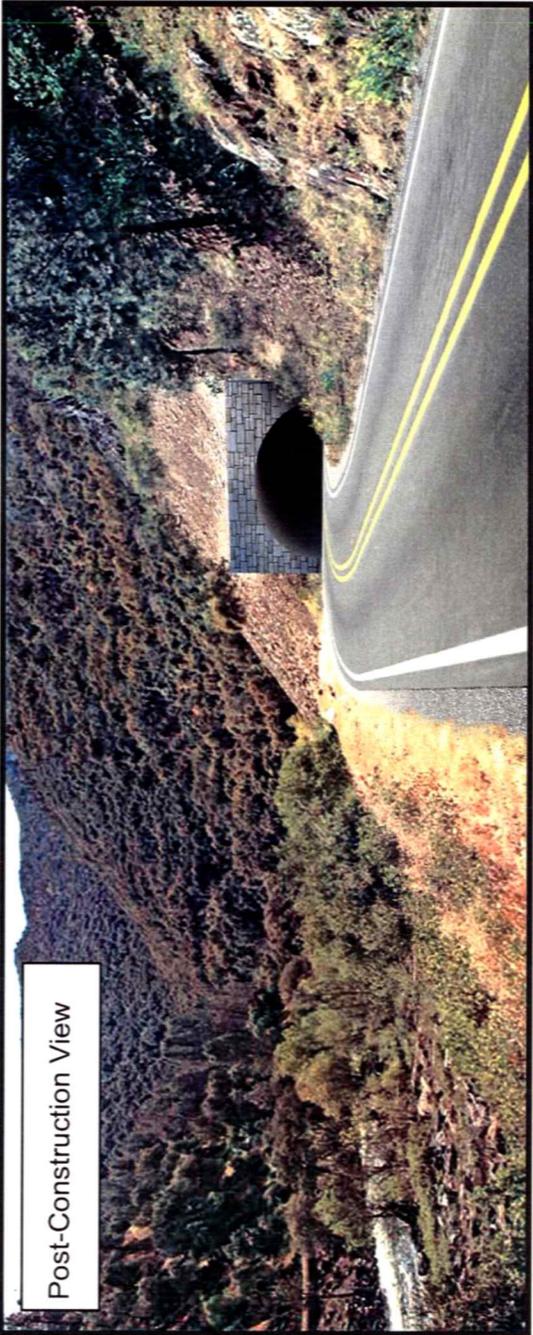


Table 4-8A
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria								OVERALL VISUAL QUALITY (V+I+U/3)	
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²	Exist ¹	Prop ²
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²				
No Build Alternative												
D-7	Driver/Roadway User Group	The No-Build Alternative would leave SR-140 damaged and blocked by the Ferguson rockslide. As a result of the No-Build Alternative, the temporary detour would become the permanent SR-140 alignment. The current vehicle length restrictions would remain in place, along with the traffic signals controlling the single-lane access through the detour. The structures for the temporary detour were constructed during a declared emergency and were designed as a temporary solution to the closure of SR-140. These structures would not meet standard design features, nor would the detour meet the purpose and need of the project.	5.9	N/A	5.7	N/A	5.7	N/A	5.7	N/A	5.76	N/A
D-8	Driver/Roadway User Group		5.5	N/A	4.7	N/A	4.3	N/A	4.85	N/A	4.85	N/A
D-9	Driver/Roadway User Group		5.5	N/A	4.7	N/A	4.6	N/A	4.95	N/A	4.95	N/A
D-10	Driver/Roadway User Group		4.7	N/A	3.4	N/A	3.7	N/A	3.95	N/A	3.95	N/A
M-3	Merced River User Group		5.9	N/A	5.5	N/A	5.1	N/A	5.51	N/A	5.51	N/A
M-9	Merced River User Group		5.9	N/A	5.7	N/A	5.7	N/A	5.76	N/A	5.76	N/A
M-11	Merced River User Group		5.5	N/A	4.7	N/A	4.5	N/A	4.91	N/A	4.91	N/A
H-2 H-3 H-8	Hiker/Trail User Group		5.1	N/A	4.4	N/A	4.0	N/A	4.49	N/A	4.49	N/A

1 – Existing Visual Quality Rating for each Key Viewpoint
 2 – Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)
 3 – Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)
 4 – Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.

Table 4-8B
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria								OVERALL VISUAL QUALITY (V+I+U/3)	
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²		
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²				
Open-cut Realignment Alternative (Alternative C)												
D-8	Driver/Roadway User Group	<p>This Alternative would realign the highway to the northeast, spanning the Merced River and bypassing the rockslide. SR-140 would cut through the mountain across from the rockslide and then span back across the river where it would meet the existing alignment. Two bridges would be constructed to cross the river. The lengths of the bridges would be 550 feet and 650 feet. The new roadway would be benched into the slope of the hillside creating a cut slope on both sides of the road. The uphill cut slope may exceed 125 feet in height, with the downhill cut up to approximately 10 feet. The highway would be constructed with two 12-foot lanes and 8-foot outside shoulders. A 20-foot-wide terrace would be constructed on both sides of the highway. The estimated cost for this Alternative would be \$62.2 million in 2007 dollars.</p>	5.5	5.8	4.7	4.5	4.3	4.3	4.3	4.85	4.86	
D-9	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
D-10	Driver/Roadway User Group		4.7	5.0	3.4	4.6	3.7	5.0	3.95	4.87		
M-3	Merced River User Group		5.9	5.2	5.5	4.0	5.1	4.2	5.51	4.47		
M-9	Merced River User Group		5.9	4.6	5.7	3.5	5.7	4.0	5.76	4.06		
M-11	Merced River User Group		5.5	5.2	4.7	3.3	4.5	3.9	4.91	4.13		
H-3	Hiker/Trail User Group		5.1	4.2	4.4	3.5	4.0	3.5	4.49	3.75		

1 – Existing Visual Quality Rating for each Key Viewpoint

2 – Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)

3 – Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)

4 – Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.

Table 4-8C
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria								OVERALL VISUAL QUALITY (V+I+U/3)			
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²	Exist ¹	Prop ²		
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²						
Rock Shed Alternative (Alternative R)														
D-8	Driver/Roadway User Group	<p>The Rock Shed Alternative proposes to construct a rock shed (cut and cover tunnel) through the talus of the slide along the existing SR-140 alignment. The rock shed would be 760-foot long providing two 12-foot lanes, 8-foot outside shoulders and a 4-foot emergency egress walkway on the rivers side. The rock shed would be a reinforced concrete box structure supported on 20-foot-long concrete piles and anchored with tie-backs into the west canyon wall. Retaining walls would be required on the approach ends of the structure to retain cuts that would be necessary for construction as well as to retain backfill material that would be placed on top of the structure to provide protection from future slides and rockfalls.</p>	5.5	6.2	4.7	6.0	4.3	6.0	4.85	6.07				
D-9	Driver/Roadway User Group		5.5	5.0	4.7	3.6	4.6	3.8	4.95	4.15				
D-10	Driver/Roadway User Group		4.7	4.7	3.4	3.8	3.7	3.8	3.95	4.11				
M-3	Merced River User Group		5.9	3.8	5.5	2.6	5.1	2.8	5.51	3.07				
M-9	Merced River User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
M-11	Merced River User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
H-3	Hiker/Trail User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
<p>1 – Existing Visual Quality Rating for each Key Viewpoint</p> <p>2 – Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)</p> <p>3 – Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)</p> <p>4 – Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.</p>														

Table 4-8D
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria								OVERALL VISUAL QUALITY (V+I+U/3)	
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²	Exist ¹	Prop ²
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²				
Viaduct Realignment Alternative (Alternative S)												
D-4	Driver/Roadway User Group	<p>This Alternative would realign the highway to the northeast, spanning the Merced River with two bridges and bypassing the rockslide with a hillside viaduct and retaining wall. The lengths of the bridges would be 805 feet and 725 feet. The viaduct and retaining wall section would be 400 feet long and supported by a terrace on the hillside and columns. Because the new roadway will be partially supported on a terrace into the hillside, this Alternative would include a cut slope along the hillside for approximately 300 feet to a maximum anticipated height of 12 feet. The highway would be constructed with two 12-foot lanes and 8-foot outside shoulders. The estimated cost for this Alternative would be \$33.3 million in 2007 dollars.</p>	5.9	4.5	5.7	3.7	5.7	3.7	5.7	3.7	5.76	3.95
D-8	Driver/Roadway User Group		5.5	5.1	4.7	4.7	4.3	4.6	4.85	4.80		
D-9	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D-10	Driver/Roadway User Group		4.7	5.0	3.4	4.9	3.7	4.6	3.95	4.83		
M-3	Merced River User Group		5.9	5.6	5.5	4.5	5.1	4.7	5.51	4.92		
M-9	Merced River User Group		5.9	5.0	5.7	3.7	5.7	3.9	5.76	4.17		
M-11	Merced River User Group		5.5	4.9	4.7	3.9	4.5	4.4	4.91	4.40		
H-3	Hiker/Trail User Group		5.1	3.7	4.4	3.1	4.0	3.2	4.49	3.33		

1 – Existing Visual Quality Rating for each Key Viewpoint

2 – Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)

3 – Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)

4 – Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.

Table 4-8E
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria								OVERALL VISUAL QUALITY (V+I+U/3)	
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²	Exist ¹	Prop ²
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²				
Viaduct Realignment w/ Tied-Arch Bridge Alternative (Alternative S2-V1)												
D-8	Driver/Roadway User Group	<p>This Alternative is similar to Alternative S in that it proposes to realign SR-140 by constructing two bridges across the Merced River and a side-hill viaduct/retaining wall on the north side of the river between the two bridges. The roadway would provide two 12-foot lanes and 8-foot outside shoulders. This Alternative differs from the Alternative S bridges by providing longer bridge spans on tangent alignments to accommodate a tied-arch bridge. A tied-arch bridge uses an arch structure with cables placed above the bridge deck for support. The downstream bridge would be 700 feet long and the upstream bridge will be 790 feet long. The height of these Alternative bridge types would be between 110 feet and 130 feet above the bridge deck. The viaduct between the two bridges is approximately 510 feet in length.</p>	5.5	5.2	4.7	3.7	4.3	3.6	4.85	4.19		
D-9	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
D-10	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
M-3	Merced River User Group		5.9	4.8	5.7	3.5	5.7	3.5	5.76	3.93		
M-6	Merced River User Group ⁴		5.9	5.3	5.7	4.3	5.7	3.9	5.76	4.90		
M-11	Merced River User Group		5.5	5.2	4.7	4.3	4.5	4.0	4.91	4.52		
H-3	Hiker/Trail User Group		5.1	4.3	4.4	3.9	4.0	3.6	4.49	3.92		
<p>1 – Existing Visual Quality Rating for each Key Viewpoint</p> <p>2 – Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)</p> <p>3 – Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)</p> <p>4 – Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.</p>												

**Table 4-8F
Summary of Existing and Proposed Visual Quality
By Key Viewpoint**

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria						OVERALL VISUAL QUALITY (V+I+U/3)		
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²	
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²			
Viaduct Realignment w/ Slant Leg Bridge Alternative (Alternative S2-V2)											
D-8	Driver/Roadway User Group	<p>The Slant-Leg Bridge Alternative is similar to the Tied-arch Bridge Alternative, differing only in bridge type and having a slightly different alignment to allow the bridge type to fit within the surrounding landscape. Like the both of the other S Alternatives, there are two bridge structures connected by a viaduct section. As with the other Alternatives, two 12-foot lanes each with an 8-foot shoulder are proposed. The downstream bridge would be approximately 860 feet long, while the upstream bridge would be much shorter than in the S2-V1 Alternative at approximately 670 feet. The viaduct section between the two bridges is relatively short, compared to the previous two Alternatives, at approximately 66 feet.</p>	5.5	5.2	4.7	4.5	4.3	4.1	4.85	4.63	
D-9	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D-10	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M-3	Merced River User Group		5.9	4.8	5.7	4.2	5.7	4.2	5.7	5.76	4.40
M-9	Merced River User Group ⁴		5.9	5.3	5.7	4.2	5.7	4.2	5.7	5.76	4.47
M-11	Merced River User Group		5.5	5.2	4.7	4.3	4.5	4.3	4.0	4.91	4.52
H-3	Hiker/Trail User Group		5.1	4.6	4.4	4.1	4.0	4.1	3.9	4.49	4.20

1 – Existing Visual Quality Rating for each Key Viewpoint

2 – Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)

3 – Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)

4 – Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.

Table 4-8G
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria						OVERALL VISUAL QUALITY (V+I+U/3)	
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²		
Northerly Tunnel Realignment Alternative (Alternative T)										
D-8	Driver/Roadway User Group	<p>This Alternative would realign the highway to the northeast, spanning the Merced River and bypassing the rockslide. SR-140 would tunnel 725 feet through the mountain across from the rockslide and then span back across the river where it would meet the existing alignment. Two bridges would be constructed to cross the river. The lengths of the bridges would be 550 feet and 650 feet. The highway and tunnel would be constructed with two 12-foot lanes and 8-foot outside shoulders. The tunnel would also contain a 5-foot walkway. The estimated cost for this Alternative would be \$72.5 million in 2007 dollars.</p>	5.5	5.6	4.7	5.1	4.3	4.7	4.85	5.13
D-9	Driver/Roadway User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D-10	Driver/Roadway User Group		4.7	5.7	3.4	4.9	3.7	4.7	3.95	5.11
M-3	Merced River User Group		5.9	5.6	5.5	4.9	5.1	4.8	5.51	5.09
M-9	Merced River User Group		5.9	5.7	5.7	5.7	5.7	5.5	5.76	5.61
M-11	Merced River User Group ⁵		5.5	5.2	4.7	3.3	4.5	3.9	4.91	4.13
H-3	Hiker/Trail User Group ⁵		5.1	4.2	4.4	3.5	4.0	3.5	4.49	3.75

1- Existing Visual Quality Rating for each Key Viewpoint

2- Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)

3- Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)

4- Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.

5 - Simulations for these Key Views are the same as shown under Alternative C - Open-cut Realignment Alternative

Table 4-8H
Summary of Existing and Proposed Visual Quality
By Key Viewpoint

Key View No.	USER GROUP UNIT	PRIMARY PROJECT ELEMENTS	FHWA Visual Assessment Criteria						OVERALL VISUAL QUALITY (V+I+U/3)	
			VIVIDNESS ³		INTACTNESS ³		UNITY ³		Exist ¹	Prop ²
			Exist ¹	Prop ²	Exist ¹	Prop ²	Exist ¹	Prop ²		
Tunnel Realignment under Slide Alternative (Alternative T-3)										
D-8	Driver/Roadway User Group ⁴	This Alternative would realign the SR-140 under the area of the slide. The tunnel would be 2200 feet long providing two 12-foot lanes, 8-foot outside shoulders and 4-foot emergency walkways. A tunnel operations and maintenance facility located reasonably adjacent to the tunnel itself would be needed along with routine 24-hour supervision of the emergency monitoring and reporting systems.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
D-9	Driver/Roadway User Group		5.5	5.9	4.7	5.6	4.6	5.5	4.95	5.67
D-10	Driver/Roadway User Group		4.7	5.9	3.4	5.4	3.7	5.2	3.95	5.50
M-3	Merced River User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M-6	Merced River User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
M-11	Merced River User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
T-3	Hiker/Trail User Group ⁴		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1- Existing Visual Quality Rating for each Key Viewpoint

2- Proposed Visual Quality Rating for Each Key Viewpoint (no rating for the No-Build Alternative)

3- Evaluation Scale: 1 to 7 (1 = very low, 4 = moderate, 7 = very high)

4- Evaluation is Not Applicable since this viewpoint does not have views to the proposed project features for this Alternative.

4.4 SHORT-TERM VS. LONG TERM IMPACTS

As the name implies, short-term impacts are of relatively short duration – the visual presence of construction equipment, or the time it takes to establish new plants, for example. Long-term impacts are those that are either permanent to the corridor, such as new retaining walls, or those impacts that take much longer to achieve full mitigation – the length of time required for new plantings to reach maturity, for example.

Short-term impacts common to all the Build Alternatives include the improved temporary bypass and new temporary bridge location (east of the current eastern bridge) for the S Alternative, as well as the visual presence of construction equipment, temporary roadside barriers, and construction signage. There would be some clearing of existing vegetation along the different alignments, the extent of which is dependent on the specific Alternative, which is discussed below.

Long-term impacts common to the Alternatives would include the new constructed roadway elements, including bridges and abutments, retaining, or tunnel walls. The new bridges would replace the existing temporary bridge, but would be taller and wider. Mitigation of the visual impact of the larger bridges is feasible by a number of methods, including the type of bridge selected (as in Alternatives S2-V1 and S2-V2, which use a tied-arch or slant leg bridge type) or in the careful siting and architectural design of the bridge.

The new roadway cross-section in all Alternatives is wider than the existing (40 feet vs. 28 feet), which also changes the visual experience along the roadway. Each of the Tunnel Alternatives along with the Rock Shed Alternative would also add a 4-foot-wide emergency walkway for a 44-foot wide cross-section.

Other anticipated long term impacts associated with each Alternative are:

Alternative C – Open-cut Realignment Alternative: The hill opposite the current SR-140 alignment would be cut through the hillside with a large (up to 130-foot) rock cut on the uphill side of the roadway and a smaller cut on the downhill side. The cut through the hill would require the removal of the existing pine and oak forest currently partially covering the hillside. As with the previous Alternative, revegetation at the base of the cut would help screen the lower portion of the cut from roadway travelers.

Alternative R – Rock Shed Alternative: The exposed wall of the Rock Shed that would be located along the Merced River would pose a long term encroachment into the views along the river for those users on the river or using the Incline Road trail. It is not likely that mitigation by screening vegetation would be feasible along the toe of an active slide.

Alternative S – Viaduct Realignment Alternative: Vegetation would be removed along the alignment and a small cut slope, anticipated to be approximately 25 feet tall, would be constructed along the hillside opposite the existing SR-140 alignment. The viaduct portion of the alignment would add a wall that would encroach on the existing views. Saving existing vegetation currently found along the river will help mitigate the encroachment by screening the wall.

Alternative S2-V1 – Viaduct Realignment with Tied-arch Bridge Alternative: Long-term impacts with this Alternative are similar to those identified under Alternative S. However, this Alternative modifies the alignment to allow for different bridge types. The architecture of the different bridge type would provide substantial mitigation of the visual impact as compared to a typical concrete bridge structure.

Alternative S2-V2 – Viaduct Realignment with Slant Leg Bridge Alternative: Long-term impacts with this Alternative are similar to those identified under Alternative S. However, as in the case of the tied-arch bridge, the architecture of the different bridge type would provide substantial mitigation of the visual impact as compared to a typical concrete bridge structure.

Alternative T – Northerly Tunnel Realignment Alternative: It is anticipated that there would be small cut slopes and some vegetation removal around the tunnel portals. However, this Alternative would remove far less vegetation than Alternative C, which is on the same alignment. The tunnel would also block views from the roadway for that stretch of roadway in the tunnel. The tunnel portal would be a new encroaching element in the landscape, but would be a relatively small point encroachment that could be mitigated for river and trail users with screening vegetation. The new tunnel would require a Maintenance and Operations Building, which depending on its siting, could be an encroachment to the visual environment for all user groups.

Alternative T-3 – Tunnel under Slide Realignment Alternative: Long-term impacts to the visual environment for this Alternative include the new tunnel and a Maintenance and operations Building that would be required given the length of the tunnel. The new tunnel would block views along the highway for drivers and passengers for the length of the tunnel. However, the tunnel would preserve the project area in its current appearance (minus the temporary bridge and paving along Incline Road). The new Maintenance and Operations Building would also add a new element to the visual environment.

4.5 CUMULATIVE IMPACTS

A cumulative impact, as defined by the Council on Environmental Quality (CEQ), is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of which agency

or person undertakes such actions. CEQA Guidelines define cumulative impacts as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

There are no additional projects anticipated within or around the project area. Therefore, no additional cumulative impacts are anticipated.

4.6 SUBSTANTIAL IMPACTS

All Build Alternatives, except for Alternatives R and T-3, place two bridges across the Merced River, and remove the existing temporary bridges. Under the No-Build Alternative the temporary bridges would remain as part of the visual environment. The new bridges, while taller in the landscape and wider than the existing bridges, are not considered a substantial impact, given the existing encroachment by the temporary bridges. By raising the bridges, views on the river and under the bridges should be less obstructed by the bridges structural elements. From a river users perspective, the taller bridges should increase the quality of the view in the bridge area by lessening the visual encroachment. The height also helps to visually mitigate the increased width of the bridge.

The Open Cut Realignment – Alternative C would construct a large cut slope (anticipated to be up to 130 feet in height) on the existing hillside opposite the existing SR-140. Left unmitigated, the cut would be a substantial impact to the visual environment of the area. Mitigation in the form of new plantings at the base of the cut would help screen the cut from those viewers on the Driver/Roadway User Group as they pass directly below the cut. However, the visual impacts from the cut will still remain for the Merced River User Group who will view the cut at a distance. In addition, given the south face and the steepness of the proposed slopes in these two Alternatives, it is not expected that vegetation will successfully reestablish on the hillside to fully mitigate the slope and vegetation removal.

The three Viaduct Alternatives (Alternatives S, S2-V1, and S2-V2) construct a visually continuous structure – bridge to road on retaining wall to bridge again – for the length of the realignment. The portion of the roadway above the wall would be a new element in the corridor (including the wall). The impact of this section, particularly to those on Incline Road and those along the river, would be substantial if left unmitigated. However, each Alternative has a different length of viaduct – 510 feet, 360 feet, and 66 feet, respectively. The shorter the viaduct section, the less the visual impact of the wall running parallel to Incline Road. Maximizing the preservation of the existing vegetation along the river and adding new plantings to screen the wall from the river would help to mitigate its visual

presence in the area. Preserving the existing slope in front of the wall to the extent possible would reduce the visual wall height and help to lessen the impacts.

Under the Rock Shed Alternative (Alternative R), the exposed wall face along the river bank would be a substantial encroachment on the visual environment for both the Merced River and Hiking/Trail User Groups. Given the direction of river flow, those on the river would have clear and unobstructed views to the wall.

Both tunnel Alternatives create far less visual impacts to existing vegetation within the project area than the Alternatives that require rock cuts (Alternatives C and to a lesser extent the three S Alternatives). For roadway travelers, views out to the project area would be substantially affected for the length of the tunnel. Alternative T-3 would also include a Maintenance and Operations building which, depending on the required siting of the structure, could be a substantial encroachment into the visual landscape of the project area, especially for the river and trail user groups. The T Alternative has a shorter tunnel, and the Operations and Maintenance building is not required.

5. Visual Mitigation

Caltrans and the FHWA mandate that a qualitative/aesthetic approach be taken to mitigate for visual quality loss in the project area. This approach fulfills the letter and the spirit of FHWA requirements because it addresses the actual cumulative loss of visual quality that will occur in the project viewshed when the project is implemented. It also constitutes mitigation that can more readily generate public acceptance of the project.

5.1 PROPOSED MITIGATION MEASURES

The following actions are recommended to address the potential adverse visual impacts to the project area and community concerns over the change of scale of the highway corridor visually within the canyon,. Implementing these mitigation measures can reduce the visual impacts of this project and would not result in a substantial change in overall visual quality for the area. Following the proposed mitigation measures is a discussion on the aesthetics design considerations for the bridge structures.

5.1.1 General Mitigation Measures

Visual Mitigation Measure 1	
Mitigation Measure	Create an Aesthetic Design Advisory committee for the purpose of making recommendations to Caltrans regarding project aesthetics. The committee should include interested community and agency representatives.
Time Frame for Application	Preliminary through final design effort. Plans for the application of aesthetic elements should be included in the final issued for construction set.
Responsible Party	California Department of Transportation
Possible Methods for Application	Employ the Aesthetic Design Advisory committee to develop a project-wide Aesthetics and Landscape Master Plan to guide the preparation of the final aesthetic and landscape treatments to the project area.

Visual Mitigation Measure 2	
Mitigation Measure	Develop the project by employing Caltrans Context Sensitive Solutions methods.
Time Frame for Application	Preliminary design. Plans for the application of Context Sensitive Solutions should be included in the final issued for construction set.
Responsible Party	California Department of Transportation
Possible Methods for Application	Develop a project-wide Aesthetics and Landscape Master Plan to guide the preparation of the final aesthetic and landscape treatments to the project area.

Visual Mitigation Measure 3	
Mitigation Measure	Provide a full-time on-site Landscape Architect during construction to oversee tree and landscape preservation, structural aesthetic applications, and revegetation of project area.
Time Frame for Application	During construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Landscape Architect to help provide oversight of construction activities to ensure adherence to plans.

5.1.2 Mitigation Measures for Grading of Cut and Fill Slopes

Visual Mitigation Measure 4	
Mitigation Measure	Warp constructed cut slopes where possible to preserve existing trees. If feasible, use variable slope grades to break up visual plane of large cut slopes.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Identify trees to remain within the project area Field modify grading at tree locations to keep out of dripline of preserved trees.

Visual Mitigation Measure 5	
Mitigation Measure	Round tops and toes of slopes to create a more natural appearance to the slopes.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Indicate slope rounding in final construction plans Provide details showing rounding in the plan set.

Visual Mitigation Measure 6	
Mitigation Measure	Excavate areas to preserve roots of adjacent trees. Do not excavate under dripline of trees that are to remain.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Survey exact locations for trees Analyze if alignment can be shifted to preserve trees Do not allow storage of vehicles or materials within the drip zone of trees. Protect the drip zone of isolated trees with fencing.

Visual Mitigation Measure 7	
Mitigation Measure	Retain existing rock outcroppings where possible.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Identify existing rock outcroppings within the project area to be preserved. Provide adequate oversight during excavation/embankment activities to ensure preservation.

Visual Mitigation Measure 8	
Mitigation Measure	Create a natural appearance to any rock outcroppings exposed by the work and stain rocks to give a weathered appearance.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Provide adequate oversight during excavation/embankment activities to ensure preservation of any exposed rock cuts.

Visual Mitigation Measure 9	
Mitigation Measure	Roughen new slopes to create look of age.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Avoid smooth, flat appearance to rock cuts by roughen face along fracture lines. Remove any drill holes or other equipment marks.

Visual Mitigation Measure 10	
Mitigation Measure	Apply erosion control to all disturbed slopes (excluding rock outcroppings) and prevent runoff into the Merced River.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Develop erosion control plans as part of final plan set based on requirements in Storm Water Pollution and Prevention Plan. Employ standard Caltrans erosion control methods

5.1.3 Mitigation Measures for Revegetation

Visual Mitigation Measure 11	
Mitigation Measure	Remove existing roadway paving, barriers, and other roadway elements associated with any unused portions of SR-140 to the extent possible without disturbing the slide area.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Remove elements off-site; do not allow on site wasting of paving or other elements.

Visual Mitigation Measure 12	
Mitigation Measure	Salvage, stockpile, and replace topsoil and duff containing seeds and organic matter from affected areas. Provide a minimum depth of 4 inches of topsoil over all exposed slopes.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Identify storage location prior to beginning construction Seed and tack all stockpiles with a self-sterile seed to hold during storage.

Visual Mitigation Measure 13	
Mitigation Measure	Replace plant materials in specific areas to visually mitigate and reduce structure height, the appearance of large cut slopes, and/or deter graffiti on walls. Develop appropriate planting ratio and maintenance program through consultation between Caltrans and the U.S. Forest Service.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Use on-site Landscape Architect to field locate planting locations for revegetation material

Visual Mitigation Measure 14	
Mitigation Measure	Replant using native species and create natural appearing patterns. Use a variety of techniques including native seeding, acorn seeding, and container stock plantings.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Determine necessary quantities for revegetation during preliminary and final design. Establish a growing contract with a nursery to ensure adequate native plant material is available.

Visual Mitigation Measure 15	
Mitigation Measure	Include temporary irrigation for plant establishment along with a minimum three year maintenance agreement to ensure establishment of new plantings.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Determine water source during preliminary design. Provide contract for water, well permits, etc as necessary to the contractor prior to planting. Add requirements to project specifications for 3 year maintenance period.

Visual Mitigation Measure 16	
Mitigation Measure	Repair Incline Road areas by removing all paving, temporary bridges, abutments, temporary fills, guard rails, etc associated with both the temporary bypass or temporary detours associated with construction.
Time Frame for Application	Final design through construction.
Responsible Party	California Department of Transportation
Possible Methods for Application	Remove all materials from on-site, no on-site wasting of materials. Revegetate per mitigation measure 12 through 15.

5.1.4 Structural Aesthetics

Visual Mitigation Measure 17	
Mitigation Measure	Locate bridge columns as far as structurally possible from ordinary high water surface elevation of the Merced River.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	See Section 5.2 for additional information on the application of this mitigation measure.

Visual Mitigation Measure 18	
Mitigation Measure	Keep the girder and deck appearance as visually thin a possible.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	See Section 5.2 for additional information on the application of this mitigation measure.

Visual Mitigation Measure 19	
Mitigation Measure	Allow a minimum 10-foot clearance of the structure over the Incline Road Trail to allow for bike riders to comfortably pass under the structure.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	Ensure length of bridge extends over Incline Road.

Visual Mitigation Measure 20	
Mitigation Measure	Minimize the height and visual massiveness of bridge abutments, particularly along the trail/Incline Road area. Bridge structures should appear to flow out of the landscape.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	See Section 5.2 for additional information on the application of this mitigation measure.

Visual Mitigation Measure 21	
Mitigation Measure	Provide texture on all walls to lessen the likelihood of graffiti on the walls.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	Use Aesthetic Design Committee to finalize textures and patterns for walls.

Visual Mitigation Measure 22	
Mitigation Measure	Concentrate on the overall architecture of the bridge and avoid overt ornamentation to the structures for the sake of ornamentation. Instead use jointing, shadow patterns, rustication lines and angular surfaces to recall the angular rock faces in outcroppings and rock from the slide.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	See Section 5.2 for additional information on the application of this mitigation measure.

Visual Mitigation Measure 23	
Mitigation Measure	Consider the use of color on structures to blend into the surrounding landscape.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	Develop color palettes based on existing colors in the corridor Use Aesthetics Design Committee to finalize color palette.

Visual Mitigation Measure 24	
Mitigation Measure	Use an open railing on the structure to increase views from the roadway into the surrounding landscape and to reduce the visual thickness of the bridge. The design should maximize motorists views yet provide a sense of security.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	Check Caltrans and other state DOT standards for railing that will be appropriate to the bridge design while providing a more open appearance.

Visual Mitigation Measure 25	
Mitigation Measure	Use darkened metal elements, or elements with non-reflective surfaces on any metal guard beams, rails, and/or posts.
Time Frame for Application	Preliminary through final design
Responsible Party	California Department of Transportation
Possible Methods for Application	Specify non-reflective metal for any exposed metal surfaces or elements.

5.2 STRUCTURAL AESTHETIC MITIGATION CONSIDERATIONS

The placement of bridges and other structures in scenic locations, like that found within the project area can yield dramatic results, as in the case of Blue Ridge Parkway in Virginia and North Carolina, and Glenwood Canyon in Colorado (see Figures 50 and 51, respectively). The success of these man-made elements within scenic natural surroundings relies primarily on the architecture of the bridge along with careful siting of the structure in the landscape.



Figure 50: Linn Cove Viaduct of the Blue Ridge Parkway
© National Scenic Byways Program



Figure 51: Glenwood Canyon, Colorado

If, in the Ferguson Slide area of SR-140, the selected Alternative includes bridges or viaduct-type structures, similar considerations to those used in these project examples need to be addressed in the siting of the structure along with the form of the structure architecture. Views of this potential structure will be important for people on or along the river, and for trail users since they are the groups that will view

the structure. For roadway users, any new alignment should afford a pleasant driving experience, exposing the motorists to the diversity and richness of spaces, colors, textures, scale and contrasts within the Merced River canyon.

5.2.1 Bridge Design Considerations

The foremost aesthetic concern for conceptual design of bridges is to present an appearance of slenderness and lightness. This can be achieved by using visually thin and elongating girder and parapet elements in the horizontal plane. More specifically, the design of a bridge can heighten the viewer's perception of lightness by:

- Forming a long, linear parapet element on the bridge and extending it past the bridge abutments in order to draw the eye past the bridge ending point (Figure 52);

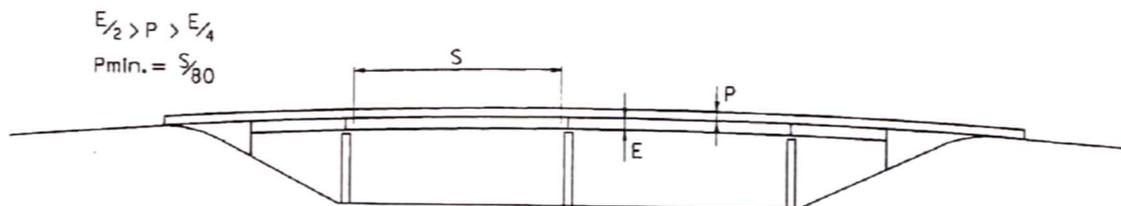


Figure 52: The parapet has a great deal of influence on the overall appearance of the bridge because it visually reinforces the girder and therefore helps determine the visual depth of the bridge to span ratio. The desirable height is between $1/4$ and $1/2$ of the exposed girder depth with a minimum $1/80^{\text{th}}$ of the span length (see the formulas in the graphic). (From Maryland Department of Transportation, *Aesthetic Bridges User Guide*, August 1993, page III-20).

- Avoid vertical lines on the bridge (such as lines created by vertical stiffeners on the outside of steel girders); or when vertical lines are necessary, using them to emphasize points of force transfer (Figure 53);

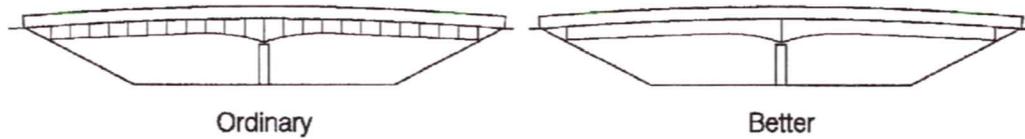


Figure 53: Vertical stiffeners can make the girder appear heavier than compared to girders that limit their use to bearing points. The figure above illustrates the use of vertical stiffeners at points of force transfer. (From Maryland Department of Transportation, *Aesthetic Bridges User Guide*, August 1993, page III-15).

- Provide clean, simple substructure forms with pier and abutment placement that create well proportioned openings. Piers size and shape should relate to the depth of the superstructure (Figure 54);

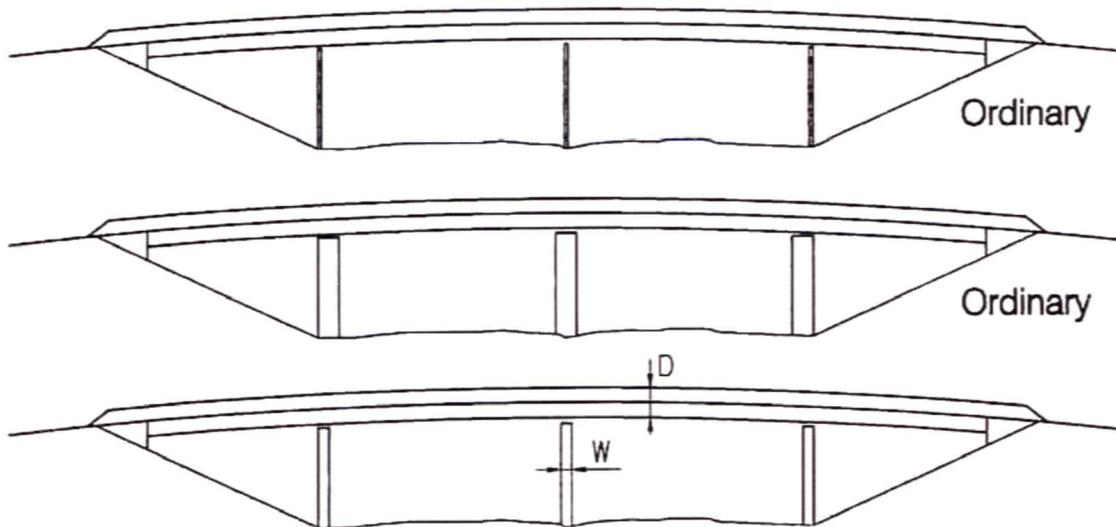


Figure 54: Pier width must be proportional to the depth of the superstructure, span lengths and pier height. This can also be influenced by the type and appearance of the parapet, which has a direct influence on the visual depth of the bridge. (From Maryland Department of Transportation, *Aesthetic Bridges User Guide*, August 1993, page IV-14).

- Maximize overhangs to cause a strong shadow on the outside of the bridge superstructure that will reduce the apparent depth of the bridge fascia (Figure 55).

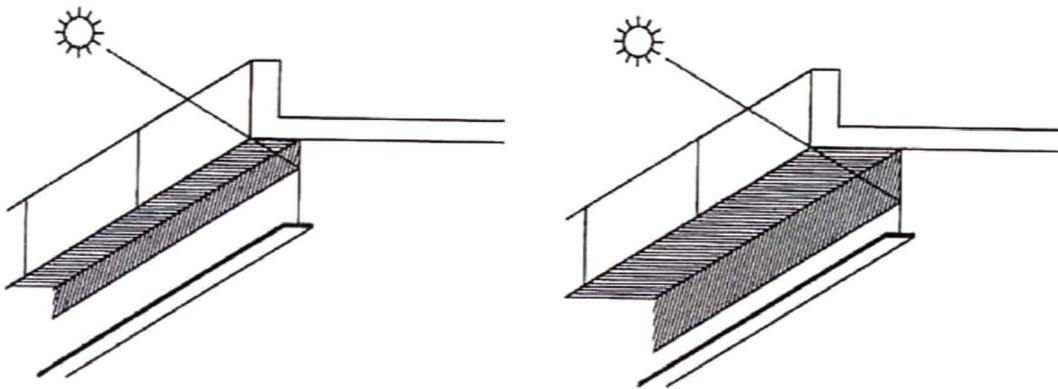


Figure 55: By increasing the size of the overhangs, the visible depth of the girder is diminished. (From Maryland Department of Transportation, *Aesthetic Bridges User Guide*, August 1993, page III-11).

- There is a trade-off between the depth of the girder and the distance between columns. Therefore, while it is possible to space the columns further apart the span of the bridge appears much thicker (Figure 56).

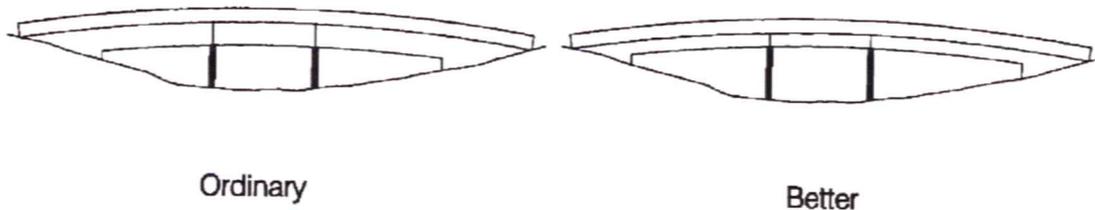


Figure 56: The appearance of slenderness is an advantage visually. Girder type, column spacing, and parapet height all influence the visual depth of the bridge. (From Maryland Department of Transportation, *Aesthetic Bridges User Guide*, August 1993, page III-2).

- The width of the space beneath the bridge should be made as generous as possible to minimize the visual disruption caused by the bridge.
- Shapes of bridge elements (the architecture of the bridge) are the major aesthetic impression; colors and textures are secondary.

5.2.2 Retaining Wall Considerations

If retaining walls must be included, the walls should be sited to maintain as much of the natural appearance of the existing landscape below the wall as possible. The use of shadow lines, coping and overhangs will also help to visually reduce the mass of the wall. In addition, a cantilevered roadway visually moves the wall back for the observer.

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