Replacement of the Antlers Bridge (Bridge No. 06-0089)

SHASTA COUNTY, CALIFORNIA
02-SHA-5-PM R39.0/R41.2
378900

Initial Study/Mitigated Negative Declaration and Environmental Assessment/Finding of No Significant Impact

Prepared by the
State of California Department of Transportation
and the
U.S. Department of Transportation
Federal Highway Administration

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Replacement of the Antlers Bridge (Bridge No. 06-0069) on Interstate 5 in Shasta County near the Community of Lakehead

INITIAL STUDY WITH PROPOSED MITIGATED NEGATIVE DECLARATION / ENVIRONMENTAL ASSESSMENT WITH FINDING OF NO SIGNIFICANT IMPACT

Submitted Pursuant to: (State) Division 13, Public Resources Code
(Federal) 42USC 4332(2)(C)

STATE OF CALIFORNIA
Department of Transportation, and the

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

8/3/06
Date of Approval

LENA R. ASHLEY
Office Chief
North Region Environmental Services, North
California Department of Transportation

9/29/2006
Date of Approval

for GENE K. FONG
Division Administrator
Federal Highway Administration

Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration, proposes to replace the Antlers Bridge (Bridge No. 06-0089) on Interstate 5 in Shasta County near the community of Lakehead. The existing bridge has exceeded its service life, exhibits evidence of severe metal fatigue and is seismically deficient. In addition, it is proposed to realign a 0.42 mile section of Interstate 5 south of the bridge to improve safety. The accident rate on this section of Interstate 5 is higher than the average for similar highways statewide. The new bridge will be constructed adjacent to the existing bridge. Traffic will remain on the existing bridge during construction. The existing bridge will be removed once the new bridge is placed in service. New highway right-of-way will be required due to the change in highway alignment. Construction is expected to begin in 2009 and will take approximately three years to complete.

Determination

Caltrans has prepared an Initial Study for the above referenced project. On the basis of this study, it has been determined that the selected Alternative, A1 (Modified East Alignment), will not have a significant effect upon the environment for the following reasons:

The proposed project would have no effect on agricultural resources, cultural resources, population, or housing.

The project would have no long-term effect relative to air quality, hazardous materials, land use and planning, public services, recreation, transportation, or utilities.

The proposed project would not have a significant effect upon community resources or geology and soils.

The proposed project would not have a significant effect on visual resources, fish and wildlife, or water quality standards because the following mitigation measures would reduce potential effects to a level of less than significant:

- Abandoned segments of highway resulting from the realignment and temporary construction staging/access areas will be restored. Natural looking ground contours and planting of native plant species are proposed to improve the aesthetic quality of these areas.
- Percussive driving of large (four feet and greater) diameter piles will be confined to the period of August 15 to January 15 to avoid impacting nesting raptors.

- To protect aquatic organisms, a bubble curtain system will be utilized for percussive driving of piles greater than four feet in diameter and for underwater blasting.
- Streams within or immediately adjacent to construction areas that can be avoided will be designated as environmentally sensitive areas (ESA). Temporary fencing will be installed to protect ESAs from inadvertent impacts during construction.
- Removal of vegetation will be minimized to the extent necessary to construct the project. Vegetative buffers will be left in place where practicable.
- The project will include design features, special provisions, and temporary and permanent best management practices to avoid and minimize water quality impacts.

Brian Crane
District Director, District 2
California Department of Transportation

12/21/2006
Date

Finding of No Significant Impact

Finding of No Significant Impact
For
Antlers Bridge Replacement Project

This project would replace an existing four-lane bridge with a five-lane bridge, and realign a 0.42 mile section of the Interstate 5 (I-5) to improve safety. The project is located on I-5 from Post Mile (PM) 39.0 to PM 41.2 in Shasta County. The new bridge would include two northbound and three southbound lanes (3.6-meter [12-ft] lane) with 3-meter (10-ft) shoulders. The number three southbound lane is an extension of an existing truck-climbing lane that begins at the south end of the new bridge and ends north to a railroad overcrossing.

The Federal Highway Administration has determined that, after study and examination, the Alternative A1 (Modified East Alignment) will have no significant impact on the human environment, and has selected it as the preferred alternative. This Finding of No Significant Impact is based on the attached Environmental Assessment and associated technical studies. These documents have been independently evaluated by the Federal Highway Administration and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and mitigation measures. The documents provide sufficient evidence and analysis for determining that an Environmental Impact Statement is not required.

The Federal Highway Administration has cooperated with the California Department of Transportation and takes full responsibility for the accuracy, scope, and content of the attached Environmental Assessment.

1/19/2007
Date

For Gene K. Fong
Division Administrator
Federal Highway Administration

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Chapter 1. Proposed Project

1.1. Introduction

The California Department of Transportation (Caltrans), in cooperation with the Federal Highway Administration, proposes to replace the Antlers Bridge (Bridge No. 06-0089) on Interstate 5 (I-5) in Shasta County near the community of Lakehead (Exhibits 1 & 2). The proposed project entails construction of a new bridge immediately east of the existing structure and realignment of a 0.42 mile section of I-5 to improve safety. Traffic will remain on the existing bridge during construction. When construction is complete, the existing bridge will be demolished. Approximately 14.5 acres of new highway right-of-way will be required due to the change in highway alignment. Land adjacent to I-5 is owned by the Department of Agriculture, Shasta-Trinity National Forest (STNF). Construction is scheduled to begin in 2009 and will require at least three years to complete.

The project is funded in the State Highway Operation and Protection Program (SHOPP) under the Bridge Rehabilitation Program (Program Code 20.10.201.110). This project is located on the National Highway System and is eligible for Interstate Maintenance Federal Aid Funds.

1.2. Purpose and Need

The purpose of the project is to provide a new highway crossing at the Sacramento River arm of Shasta Lake and to reduce the accident rate on the section of I-5 immediately south of the bridge.

The Antlers Bridge was built in 1941 by the Bureau of Reclamation. In 1967, the bridge was widened to accommodate increasing traffic volumes. The bridge has exceeded its design life and exhibits significant characteristics of aging. Structural fatigue, amplified by the increased stresses of the1967 widening, has resulted in failures in the superstructure and deck. An inspection in April 1985 by Caltrans' bridge maintenance staff revealed numerous cracks in steel members, cracked weld joints, and bolt failures. As a result of these findings, projects were initiated to retrofit the steel superstructure and rehabilitate the bridge deck. During the winter of 2003, a hole approximately one foot in diameter developed in the concrete bridge deck. Upon further inspection, it was determined that the concrete deck was deteriorating at an accelerated rate due in part to the weakening condition of the steel superstructure. An emergency project to replace the deck was completed in 2004.

Continued deterioration of the structure could lead to load restrictions, lane restrictions, and eventual closure.

Antlers Bridge is a key element of the I-5 corridor, located in an area where detours can cause considerable delays. Projected increases in future traffic volumes will increase the demand on the structure as the level of service (LOS)[1] progressively decreases. Failure to implement a scheduled, planned replacement could result in future detours due to deficiencies of this structure.

In addition to the bridge deficiencies, the section of highway immediately south of the bridge includes a series of curves on a six percent grade. The accident rate on this section of highway is higher than average for similar highways statewide. The following accident data was collected for the section of I-5 between post miles (PM) R39.40 and R41.40 for the period of April 1995 through March 2000:

- PM R39.40 to R39.70: Six incidents; property damage only.
- PM R39.70 to R40.00: Eleven incidents including one fatality and four injury incidents (five persons injured). The fatality was a single-vehicle, single occupant, DUI.
- PM R40.00 to R40.50: Sixteen incidents including five injury incidents (six persons injured).
- PM R40.50 to R41.40: Nine incidents; property damage only.

1.3. Project Description

The project entails construction of a new bridge immediately east of the existing structure and realignment of a 0.42 mile section of I-5 to improve safety. Traffic will remain on the existing bridge during construction. The existing bridge will be removed once traffic is diverted to the new structure. Temporary easements will be obtained for various construction access and staging areas to facilitate construction. Approximately 14.5 acres of new highway right-of-way will be required. Excess right-of-way resulting from the abandonment of a portion of the existing highway alignment will be offered for sale to the adjacent landowner, which is STNF. The project study limits are shown in Exhibit 3.

Construction is scheduled to begin in 2009 and will require at least three years to complete. The proposed bridge type is a five-span cast-in-place segmental concrete

[1] Level of Service (LOS) is a qualitative measure of operating conditions within a traffic stream, and their perception by motorists and/or passengers. A LOS definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety.

box girder structure (Exhibit 4). Bridge railing is steel with a linear, open appearance. The bridge will be supported by four sets of piers. The bridge will have two northbound lanes and three southbound lanes, one of which is an extension of the existing truck-climbing lane that begins at the south end of the bridge. The truck-climbing lane will be extended north to the railroad overcrossing. Roadway shoulders will be 10 feet in width with the exception of sections of I-5 with adjacent rocky cut slopes where additional shoulder width may be desirable to accommodate rock fall.

Utilities within the project limits include Pacific Gas & Electric electrical transmission lines and SBC, AT&T and Pacific Bell communications lines. SBC and AT&T have communication lines on the existing bridge, while PG&E does not. SBC, AT&T, and PG&E have requested a utility duct in the new bridge to provide a crossing of Shasta Lake. Caltrans will provide four-inch ducts within the bridge to accommodate these utilities. In addition, Caltrans Office of Structures has requested installation of electrical service on the new bridge for seismic monitoring equipment and maintenance lighting. It is anticipated that the service will be obtained from an existing underground PG&E service line near the intersection of Antlers Road and Antlers School Road.

1.4. Project Alternatives

Caltrans approved an internal document called a Project Scope Summary Report (PSSR) on September 5, 2001 to formally initiate the project development process. Project alternatives were developed based on preliminary traffic and engineering data, traffic and planning studies, and preliminary information concerning environmental resources. The PSSR considered eight project alternatives, including a “no-build” alternative. Five of the build alternatives were eliminated from further consideration because either they did not satisfy the project purpose and need or they entailed work that was beyond the scope of the current project. The “no-build” alternative and the remaining three build alternatives were carried forward in the PSSR for further evaluation. (Alternatives discussed in the PSSR were labeled numerically. However, in subsequent documents, the alternatives being carried forward were changed to an alpha designation.)

In 2004, a Value Analysis Team was assembled to analyze the project. Value Analysis is defined by Caltrans as “the process used to improve the quality and reduce the cost of transportation projects and other Caltrans programs.” The Value Analysis process was completed in May 2004 and recommendations were presented to Caltrans management in June 2004. The Value Analysis team recommended development of a new alternative, Alternative A1, which entails modification of an

existing alternative. Alternative A1 became the preferred alternative because it best satisfied the purpose and need criteria while reducing project costs and potential impacts upon the environment. The project development team agreed with this recommendation and based on the results of the Draft Initial Study/Environmental Assessment, and comments received by individuals and organizations during the public review period, the project development team recommended project approval and implementation based on Alternative A1.

The project alternatives (Exhibit 5), except for the “no-build” alternative, entail construction of a new bridge on a different alignment. Bridge replacement on the existing alignment is not feasible because there is not a viable detour route available to accommodate traffic while the existing structure is demolished and the new bridge is constructed. In addition, a 0.42 mile section of I-5 south of the bridge will be realigned to improve safety. Due to the steep mountainous terrain at the south end of the bridge, it is necessary to shift the bridge alignment slightly to the east to attain the desired highway alignment.

Several types of bridges were considered, including suspension bridges, cable-stay bridges, steel truss and steel girder bridges, and concrete bridges with various pier and span configurations. The major factors considered in bridge type selection include the costs for construction and maintenance; physical constraints due to the long span, recreational boating requirements, and fluctuating water level of Shasta Lake; and environmental constraints such as the proximity of an existing public boat ramp and a culturally sensitive area.

Suspension and cable stay bridges are more costly than other types of structures due in part to the fact that they are difficult to build on curved alignments. A straight bridge alignment in this case is not desirable because it would require a longer structure, which is more costly. In addition, due to the steep terrain at the south end of the bridge, substantial embankments and earth retaining structures would be necessary. This would result in additional construction and right-of-way acquisition costs and destruction of upland and stream habitat.

Steel bridges require more maintenance than concrete bridges and an intensive inspection regime to assess structural fatigue. In addition, a steel bridge with satisfactory fatigue resistance would require additional piers in the water. The placement of piers could result in a conflict with recreational boaters on Shasta Lake and the Antlers public boat ramp. The steel arch structure considered for this project was estimated to be more than two times the cost of a concrete bridge.

Different types of concrete bridges were considered, including various pier and span configurations. Concrete bridges are cost effective, low maintenance, and can be

modified easier than a steel structure, and can easily accommodate a curved alignment. The preferred bridge type is a concrete cast-in-place segmental box girder with large diameter piles. The box girder structure was chosen for its long span potential, aesthetic qualities, durability, and competitive cost. Large diameter piles will allow longer spans, which reduce interference with the public boat ramp and provide more open water for boaters and lake recreation.

1.4.1. Alternative A (The East Alignment)

Alternative A entails construction of a new bridge immediately east of the existing structure. The bridge would have a slight curvature (2,950 foot radius). The roadway immediately south of the bridge would be shifted to the east to improve the radii of a reversing ("S") curve, from approximately 1,000 feet to 1,300 feet. A large embankment and earth retaining structure would be necessary due to steep terrain east of the existing roadway. This alternative satisfies the project "purpose and need" by providing a new crossing at the lake, but it does not provide an optimal alignment for this type of highway. An optimal alignment, based upon modern highway design standards for this section of highway, would have a curve radius of at least 2,000 feet. In addition, the large embankment and earth retaining structures would significantly increase the cost of the project due to increased labor and material costs and the need for additional right-of-way.

1.4.2. Alternative A1 (Modified East Alignment)

Alternative A1, which was developed during the Value Analysis process, is a modified version of Alternative A. Relative to the other alternatives, Alternative A1 offers a better roadway alignment, constructability, and minimization of environmental impacts. Therefore it is the preferred alternative. It differs from Alternative A in that the roadway alignment south of the bridge is shifted westward to eliminate the need for large embankments and substantial earth retaining structure to span the steep terrain east of the existing highway. This would save substantial construction and right-of-way acquisition costs, and reduce impacts to upland and stream habitat. Shifting the roadway alignment westerly also facilitates straightening this section of highway. The bridge alignment is slightly curved, but less so than the existing bridge. The alignment of Alternative A1 is far enough from the public boat ramp to avoid conflicts with boating activities. The roadway north of the bridge would conform to the existing roadway alignment prior to crossing under the Union Pacific Railroad Underpass.

1.4.3. Alternative B (The Straight Alignment)

Alternative B entails construction of a new bridge with a straight alignment east of the existing bridge. The section of highway south of the bridge would be realigned to produce one curve with a radius of 2,000 feet. This alternative satisfies the project "purpose and need", however, it is more costly than the other alternatives due to the added length. In addition to the longer structure, a substantial embankment and earth retaining structure would be required between the southern bridge abutment and the highway. Alternative B would result in greater impacts to upland and stream habitat, additional right-of-way requirements, increased potential for erosion, increased maintenance of embankments, and increased construction costs. In addition, Alternative B is close to the public boat ramp and it is likely that one of the bridge piers would interfere with ramp operations to the extent that the ramp would need to be relocated or realigned.

1.4.4. Alternative C (No Build)

The "no build" alternative preserves the existing bridge and highway alignment. This alternative neglects the bridge's escalating structural problems and the higher than average accident rate associated with the roadway alignment. The "No Build" alternative will result in excessive maintenance costs, which could quickly exceed the cost of a bridge replacement project. A structural failure could result in closure of the bridge for an undetermined period of time, during which, all traffic using the interstate would be required to take an alternate route. There are no viable detour routes available.

1.5. Alternatives Considered but Eliminated from Further Discussion

1.5.1. Alternative D (The West Alignment)

Alternative D proposed construction of a new bridge immediately west of the existing bridge. The bridge alignment would require a sharper curve radius than what currently exists in order to conform with the highway alignment north and south of the bridge. The curves south of the bridge would not be improved.

This alternative was eliminated from further consideration because it does not eliminate the operational and safety deficiencies on this section of highway.

1.5.2. Alternative 5

Alternative 5 proposed replacement of the existing bridge in the same location. During demolition of the existing bridge and construction of the new bridge, traffic would be detoured between Redding and Mount Shasta via State Routes 299 and 89 through Burney. This detour route is apprioximately 111 miles in length compared to the distance of 60 miles on I-5 between Redding and Mount Shasta. This alternative does not improve the highway alignment south of the bridge.

Alternative 5 was eliminated from further consideration due to the lack of a viable detour and because it does not eliminate the operational and safety deficiencies on this section of I-5.

1.5.3. Alternative 6 and 7

Alternatives 6 and 7 are similar in that they entail a realignment of I-5 from the south end of the Antlers Bridge southerly to a location north of the Gilman Road/Salt Creek Interchange. The alignments differed somewhat, but both would require extensive earthwork due to the steep terrain in this area. New right-of-way would be required.

Although these two alternatives improve the safety and operational aspects of the highway, they require extensive highway reconstruction work that is beyond the scope of this bridge replacement project.

1.5.4. Alternative 8

Alternative 8 would elevate the section of I-5 at the north end of the bridge to create a railroad overpass in place of the existing Antlers Railroad Underpass (Bridge #6-47). The new section of freeway would join the existing elevation of I-5 near the interchange ramps south of the Lakeshore Drive/Antlers Road Undercrossing at postmile R40.9. This alternative would eliminate the one constraint faced by other alternatives, which invovles connecting the north end of the structure to a designated point (elevation) on I-5 prior to the Antlers Railroad Underpass. This alternative does not improve the highway alignment south of the bridge.

This alternative was eliminated from further consideration because the effort and cost involved in raising the section of I-5 at the north end of the bridge exceeds the scope of the proposed project. In addition, this alternative does not address the operational and safety deficiencies on the section of I-5 south of the bridge.

1.6. Construction Process

The methods and scheduling of construction activities will be determined by the contractor. Project specifications will identify the desired outcome for each aspect of the project, for example, “remove existing bridge piers to an elevation one foot below original ground.” The contract provisions will not always direct how the work is to be performed. The contractor could therefore use any construction method not specifically prohibited in the contract provisions. Aside from the availability and cost of equipment and materials, a major factor that can affect the project schedule and construction methods is the fluctuating lake level. The water level in Shasta Lake is controlled by the Bureau of Reclamation for the main purposes of providing irrigation and flood control. During an average year, drawdown begins in June for irrigation and continues through the summer. The drawdown continues into the winter for flood control purposes. Recharge of the lake level begins with the winter rains. During an average year, the main piers of the existing bridge will be situated in a maximum water depth of approximately 100 feet. During the drawdown cycle, the water level recedes 50 to 65 feet. However, due to variations in climate patterns, such as droughts and extremely wet years, it is not possible to predict what the lake level will be at any given time. The fluctuating lake level and unpredictable climatic changes therefore can be a major influence on the schedule and choice of construction methods.

Following is an estimation and examples of construction processes that may be used for this project based on existing site conditions and standard construction practices:

The contractor will need access to the lake and areas for construction staging. Caltrans has identified several areas to accommodate these needs. The construction access and staging areas have been evaluated for California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) compliance and, if applicable, temporary easements will be obtained. Public campgrounds and boat ramps will remain open during construction and will not be available for construction related use pursuant to the provisions of Section 4(f) of the Department of Transportation Act of 1966 (See Appendix B). Following are the areas proposed for the contractor’s optional use as temporary construction access and staging areas:

A) An area of approximately 8 acres on STNF land with lake frontage located near the northwest corner of the Antlers Bridge. This area will be used for staging construction operations and storage of materials and equipment. An easement will be obtained on the lakeshore to provide the contractor with the option of constructing a temporary dock or ramp to gain access to the lake. A ramp would likely extend to the low water level. Construction of a ramp could

require the importation of up to 119,000 cubic yards of clean rocky material. Suitable material may be available from excavations that will occur at Haycock Peak for the new highway alignment. If necessary, rock can be imported from a commercial source. The material used to create the access ramp would be removed from the lake following construction and the lakeshore would be returned as close as possible to its pre-construction condition.

B) Approximately 2.3 acres are available immediately east of I-5 at the northern bridge abutment. This is the area where the northern abutment of the proposed bridge will be located. Consequently, extensive earthwork will occur at this location.

C) An easement is available for construction of a 30 foot wide temporary access road and ramp immediately west of the Antlers public boat ramp parking lot and northerly of the boat ramp. An additional area of approximately one acre is included for staging. The temporary construction ramp would be situated so it does not interfere with the operation of the public boat ramp. This area is a supplemental access point for construction. Following construction, the area will be restored to pre-construction conditions or to an agreed upon condition as determined by STNF.

D) The wide area adjacent to the traveled way, within the highway right-of-way, at the south end of the bridge.

Traffic will remain on the existing bridge during construction. Periodic traffic control will be necessary, especially during activities associated with the realignment of I-5. It is likely that barges will be used extensively for bridge foundation construction, bridge assembly, transport of materials, workers and equipment, and demolition of the existing bridge. The contractor may choose to construct a system of temporary roads, bulkheads, docks, trams, and/or conveyor belts to load and unload barges. A staging area will be required on the lakeshore from which barges can be loaded and unloaded.

Due to the need for substantial amounts of Portland cement concrete (PCC), it is anticipated that the contractor will establish a temporary PCC batch plant close to the work site. Adequate supplies of PCC are available from commercial plants in Redding and Mount Shasta. However, due to the distance, it is unlikely that the contractor will utilize these sources. Establishment of a temporary batch plant will require the contractor to obtain an operating permit from the California Air Resources Board (CARB). It will be necessary for the contractor to perform CEQA studies pertaining to air quality, noise levels and possibly other environmental factors related

to the operation of a temporary batch plant. Caltrans has conducted biological and archaeological studies to provide an area for such operations. However, it was not possible to conduct all of the necessary studies because the analysis is dependent upon such factors as type, size, and period of operation of the plant, which will not be known until construction begins.

Bridge construction will begin with the piers and abutments. The new bridge has an abutment at each end and four piers in between. The two outer piers consist of two individual piles each and the two inner sets consist of four piles each. Preliminary estimates indicate that each pile will be approximately 13.1 feet in diameter. Construction of the piers entails driving the steel pile shells into the lakebed until an adequate seal is formed at the bottom of the shell. The steel shells will probably be limited to lengths of approximately 30 feet to facilitate transport and handling. An auger will then be inserted into the shell and a hole will be drilled to the specified foundation depth, approximately 140 feet below the surface of the lakebed. It may be necessary to dewater the shells during drilling if water seeps in. Drill cuttings will either be deposited on the lakebed or removed and disposed of at an upland location. It is estimated that the twelve piles will generate between 3,000 and 7,300 cubic yards of drill cutting material. Additional shells will be spliced (welded) on top of the initial shell. The process will be repeated until the superstructure elevation is reached. Reinforcing steel will be installed within the shells prior to pouring the concrete. The steel shells function as forms and are not a structural element of the bridge. They can be left in place or removed once the concrete is cured depending on the desired aesthetic effect. Concrete shrouds can also be utilized, at additional expense, to enclose the piers. The abutment foundations will utilize smaller piles, approximately three feet in diameter. Upon completion of the piers and abutments, construction of the superstructure and bridge deck will begin via the balanced cantilever method. This process entails forming and constructing the horizontal structure outward from the piers in each direction, in equal (balanced) proportions, until the superstructure/deck segments meet at mid span. Each section of deck will require substantial amounts of reinforcing steel and concrete. The bridge deck, from curb to curb, will be approximately 100 feet in width. Each pile, abutment, and deck segment will require a continuous concrete pour. Depending on the method of concrete delivery, some pours could continue for more than 24 hours at a time. In addition to concrete pours, night work may be required for auguring the massive pier piles.

Realignment of the highway will require cuts and fills that will generate approximately 236,700 cubic yards of excess material. The material will be used on-site to restore the temporary construction staging areas and the sections of I-5 abandoned as a result of the highway realignment. Any excess material will be disposed of within

Caltrans right-of-way or at a site approved by the Caltrans resident engineer. Approved disposal sites within Caltrans right-of-way include an area adjacent to the northbound lanes of I-5, five miles north of the bridge at post mile 45.0 and a bench adjacent to the southbound lanes of I-5 between post miles 38.35 and 38.65. The site at post mile 45.0 is a segment of former State Route 99 that was abandoned when I-5 was constructed. The site is being developed to restore the natural contours and will be planted with native species once final grading is complete. The site between post miles 38.35 and 38.65 is a large embankment with a 40 foot wide bench near the bottom. The embankment would need to be cleared of vegetation prior to placing additional fill. If the ccontractor requests use of an alternate disposal site(s), it will be necessary for the contractor to provide the Caltrans resident engineer with evidence that an evaluation of the site was performed pursuant to the CEQA and applicable permits have been obtained.

1.7. Demolition of Existing Bridge

Following completion of the new bridge and realignment of I-5, traffic will be diverted to the new bridge and the old bridge will be removed. The existing bridge is a continuous span steel truss structure supported by six concrete piers. The piers are approximately 10 feet thick, 40 feet wide, and up to 150 feet in height. The piers have hollow cells throughout and contain substantial amounts of reinforcing steel.

The first step in the demolition process is removal of the concrete deck. A catchment system will be installed to prevent demolition debris from entering the water. A catchment system could be affixed to the bridge itself, to a crane barge, or a barge by itself can be used to catch debris. The deck will be removed in manageable sections, most likely with the use of a pneumatic or hydraulic hammer and a cutting implement to sever the reinforcing steel. Following removal of the deck, the steel superstructure will be disassembled. Once disassembly of the steel trusses begins, the structure will become unstable and a temporary support system will be necessary. The support system would likely consist of steel piles driven into the lakebed. Disassembly of the structure might be done with explosives or via piecemeal flame cutting and removal by crane. This work may occur when the lake is full so barges and cranes can easily reach the structure. Following removal of the superstructure, the concrete abutments and piers will be removed. This might occur during the period between September and January when the lake is at its lowest level. Potential methods for demolishing the bridge piers include, but are not limited to, explosives, diamond-wire saw cutting, stitch drilling, toppling, chemical demolition agents, mechanical splitters, hydro-demolition (water blasting), and oxygen thermal lance (flame-cutting). These are all viable demolition methods that work underwater and could be employed at the Antlers Bridge. Demolition of the piers and abutments

will result in approximately 4,063 cubic yards of concrete rubble, including reinforcing steel.

An optional disposal site for steel and concrete waste generated by bridge demolition will be designated in the contract. Use of an alternate disposal site will require the contractor to provide the Caltrans resident engineer with evidence that an evaluation of the site was performed pursuant to the CEQA and that applicable permits have been obtained.

The abandoned highway alignment will be obliterated. The pavement will be broken up and removed or buried onsite within the highway embankment. Final construction operations will include final grading and restoration of staging areas, installation of miscellaneous fencing, installation of rock slope protection (RSP) and other erosion control items, and installation of signing and traffic striping.

1.8. Permits and Approvals

Agency	Permit/Approval	Requirement
California Department of Fish & Game, Region 1	Stream/Lakebed Alteration Agreement [Section 1602 Fish and Game code]	Required for construction/demolition activities within lake and streams. Permit to be obtained by Caltrans.
United States Army Corps of Engineers, Sacramento District	Department of the Army Permit [Section 404 of the Clean Water Act]	Required for construction/demolition activities within lake, stream & wetlands. Permit to be obtained by Caltrans.
Regional Water Quality Control Board, Central Valley Region	Water Quality Certification [Section 401 of the Clean Water Act]	Pre-requisite for Army Corps permit. Water Quality Certification to be obtained by Caltrans.
Regional Water Quality Control Board, Central Valley Region	Dewatering permit [National Pollutant Discharge Elimination System]	Necessary for dewatering if discharge will enter a water body. Permit to be obtained by contractor.
California Air Resources Board	Permit to operate a temporary Portland cement concrete plant; Notification prior to demolition of existing bridge per NESHAP and CARB rules.	Required for all bridge demolition or renovation work. Notification to be made by contractor.
U.S. Department of Agriculture, Shasta-Trinity National Forest	STNF is a cooperating agency for NEPA compliance. Additionally, approval is required for temporary and permanent	Caltrans will obtain authorization for temporary and permanent easements needed for construction and highway right-of-way.

Agency	Permit/Approval	Requirement
	easements upon STNF land.	
U.S. Department of the Interior, Bureau of Reclamation	Right-of-Use Authorization	Required for any work within Lake Shasta. Caltrans to obtain authorization.
U.S. Fish & Wildlife Service	Section 7 consultation for threatened and endangered species (Bald Eagle)	Caltrans has completed consultation for bald eagle. Letter of concurrence received on November 9, 2005