State of California Business, Transportation, and Housing Agency

Memorandum

To: Rick Knapp, Director
District 1

September 12, 2001

01-29010K
01-Hum-101-pm0.0/R5.6
Richardson Grove Bypass

From: Friday Ululani, Project Manager

Subject: Feasibility Study

Attached is the Feasibility Study prepared for this project. It has been concluded, based on this study, that it is infeasible to consider development of a four-lane Freeway/Expressway for this segment of Route 101.

This study incorporates input and direction from the public, staff from Caltrans and other agencies, the Humboldt County Association of Governments (HCAOG), and Caltrans' management. It has, furthermore, been formally reviewed and approved by HCAOG.

I am confident, in presenting this document to you, that it presents a thorough and well-reasoned approach to dealing with this segment of Route 101. It is intended to serve as a basis for amendment of the Route 101 Concept Report.

Friday Ululani, Project Manager

Approval Recommended:

Charlie Fielder, Deputy District Director,
Program/Project Management

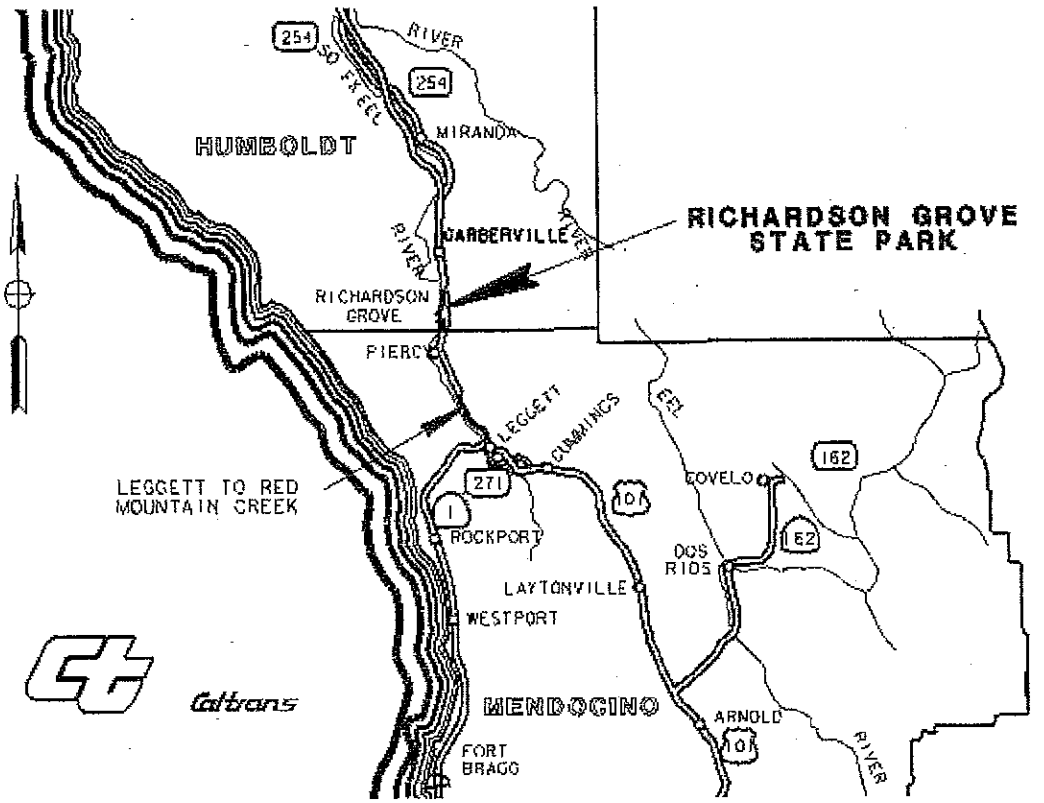
Cheryl Willis, Deputy District Director,
Planning

Approved:

Rick Knapp, District Director

9/13/01
Date

FEASIBILITY STUDY REPORT



Project Location Map

Location: On Route 101 in Humboldt County From the Mendocino / Humboldt County Line to the Smith Point Bridge at PM R 5.6.

Description: 4-Lane Freeway/Expressway Bypass at Richardson Grove State Park

Prepared By: Heidi Quintrell

INTRODUCTION – The Richardson Grove State Park Project includes four alternatives, including widening of existing alignment, for a 4-lane freeway/expressway through or around the State Park. This section of Route 101 is located in Southern Humboldt County, from the Mendocino/Humboldt County line continuing north for 3.5 miles. The original Project Report, covering 43 miles of Route 101, was initiated in 1955 to provide a 4-lane freeway through this area of Humboldt County. The segment in and around Richardson Grove State Park is the only remaining section that has yet to be completed. This project has been put on hold and reopened several times throughout the last 45 years.

In the late summer of 2000, the director of Caltrans requested District Directors to identify "long-standing projects" that have been under consideration for many years, but still have no resolution. One long-standing project identified in District 1 is Richardson Grove State Park Bypass Project. The District Director was asked to prepare a plan with recommendations on how to proceed with this project. This feasibility study was prepared with the coordination of Humboldt County Association of Governments and the Regional Transportation Planning Agencies as a planning document.

PURPOSE OF THIS FEASIBILITY STUDY – The purpose of this study is to determine if construction of a 4-lane freeway/expressway through or around Richardson Grove State Park is feasible from engineering, environmental and economic standpoints. If not, the route concept for this portion of Route 101 should be changed and problem locations studied on the existing alignment.

ROUTE CONCEPT – The District 1 Route Concept Report for Route 101 calls for a 4-lane freeway/expressway facility for this section of highway. The Route Concept Report, dated November 1994, is a 20-year planning document that has historically been supported by the Regional Transportation Planning Agencies in the District and the North Coastal Counties Supervisors Association.

BACKGROUND – (Attachment A) The Richardson Grove State Park Bypass Project was originally addressed in a project report dated September 27, 1955. This project report included not only the immediate Richardson Grove area, but an extensive 43-mile section of Route 101. The California Highway Commission, CHC, (now the California Transportation Commission, CTC) adopted the alignment proposed by this 1955 Project Report on March 21, 1956. Subsequent studies resulted in the adoption of a new alternative (Alternate "A") in the vicinity of Richardson Grove State Park on June 25, 1968. Presently, all of this 43-mile section is now 4-lane freeway/expressway except the portion studied in this feasibility study. About one-third of this section passes through Richardson Grove State Park. For this feasibility study all technical data was taken from a Draft Project Study Report (Draft PSR) written in 1989. This report had the 1968 adopted alignment, Alternate "A", and added two new alignments, "B" and "C". Due to budget constraints, the project was put on hold. Projects within this section have been limited to maintaining and improving the operation and safety of the existing facility.

EXISTING HIGHWAY – The existing section of Route 101 within the project limits is a 2-lane conventional highway. This section follows the westerly bank of the Eel River and meanders through a scenic corridor lined by old growth redwoods, novelty shops, restaurants, vacation cottages, service stations, and campgrounds in and around Richardson Grove State Park. Abutting to each end of this segment of Route 101 is a 4-lane freeway.

ISSUES

- **Engineering** – The existing route is a narrow 2-lane conventional highway with giant redwood trees at the edge of narrow shoulders. The trees within park boundaries restrict sight distance and horizontal clearances, as well as causing small radius curves.

- **Geometric Standards** – The original study (1955) envisioned a freeway with a 60-foot all paved roadway width; two 12-foot lanes in each direction, a 4-foot median, and 4-foot shoulders to the right of traffic. The Draft Project Study Report (1989)

proposed increasing the shoulder widths to 10 feet. If any alternative is determined feasible, current design standards for mountainous terrain of 6.6-meter (22-foot) medians and 3-meter (10-foot) shoulders to the right of traffic will need to be used or a design exception will have to be granted.

- **Highway Corridor Consistency** – This is one of only two remaining gaps in an otherwise continuous 4-lane freeway/expressway from Cummings in Mendocino County (PM 81.4) to Eureka in Humboldt County (PM 74.6), a distance of 96 miles. The other being the section from Leggett to Red Mountain Creek located in northern Mendocino County.

- **Traffic and Safety** – A 4-lane freeway/expressway facility would assure passing opportunities, reduce peak hour delays, and provide the concept Level of Service (LOS) C established for this facility. According to the 1989 Draft Project Study Report for this project, the 1989 LOS was "E" with an average speed of 64 kph (40 mph) or less and an Average Daily Traffic (ADT) of 4850 vehicles. The 1999 ADT for this segment of highway was 5100 vehicles, and the projected 20-year ADT is 7300 vehicles. Between July1, 1997 and June 30, 2000, a total of 38 collisions were reported within the segment. Of the 38 collisions, 1 resulted in a fatality, 13 resulted in injuries and the remainder resulted in property damage only. The three-year total collision rate for the segment is 1.2 times the statewide average and the fatal collision rate is 1.5 times the statewide average, compared to similar facilities.

- **STAA Trucking** – The section of Route 101 within Richardson Grove State Park boundaries is one of two locations between San Francisco and Eureka preventing Surface Transportation Assistance Act (STAA) vehicles from reaching Eureka. The other location is in Mendocino County, KP 160.9 (PM 100.0), approximately 150m (500ft) north of Confusion Hill Slide.

- **State Park** – To have the primary arterial route divide a popular State Park creates congestion and delay for the motorist and noise and visual distractions for park visitors. As per a letter dated May 3, 2001, from the North Coast Redwoods District of the California Department of Parks and Recreation (Attachment C), no new alignments or improvements will be supported that "may adversely impact state park resources."

- **Maintenance** – This section of Route 101 has historically experienced above-average maintenance costs. According to the Draft Project Study Report (1989), from 1984 to 1988, the annual maintenance costs have averaged $30,000 per mile. This compares to an annual average maintenance cost of $20,000 per mile for the 66 mile freeway section of 1-Hum-101-8.0/74.0 (Benbow to Eureka), in the same 4-year period. From 1997 to 2000, the annual maintenance costs for this 3.5-mile section of two-lane road have increased to an average of $51,700 per mile.

- **Environmental Feasibility of Proposed Alternatives** – Each of the proposed alternates would require extensive environmental studies due to the magnitude of the project and the anticipated significant impacts to water quality, State and Federal Threatened and Endangered Species (notably salmonids, the Marbled Murrelet, and the Northern Spotted Owl) and their associated habitats, and designated Wild and Scenic Rivers. Noise impacts, air quality impacts, and visual impacts will also require detailed assessments. In addition, there are known cultural sites within the project limits and detailed cultural resource studies will be necessary.

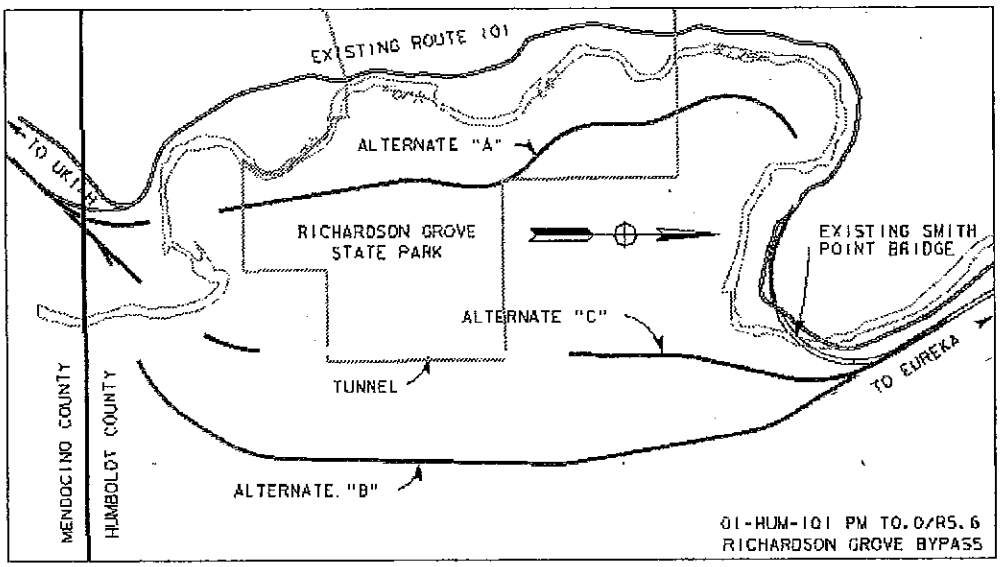
  Section 4(f) of the Department of Transportation Act of 1966, 49 USC 303, prohibits the selection of any alternate that requires the use of publicly owned parklands or recreational areas, unless no feasible and prudent alternative exists. This would apply to Alternate "A" and "Widening Existing Alignment", and to a much lesser extent, Alternate "C". Alternative "B" is the only alternate that would avoid parkland completely.

  Disposal of excess material for this project, and the associated concerns regarding water quality and aquatic habitat, will be problematic for Alternates "A" and "B." These alternates have disposal needs ranging from 750,000 cubic meters for Alternate "A" to nearly 42 million cubic meters for Alternate "B." Finding a disposal site for the least amount required would prove to be extremely difficult. For Alternate "B" there is no known place for this material.

  Mitigation for environmental impacts on most alternates would be extensive, and will likely be necessary for park impacts, water quality, visual resources, and endangered species habitat impacts.

- **Economic Feasibility of Proposed Alternatives** – Alternatives range from $75 - $600 million. As discussed in section "FUNDING" later on in this report, the high cost for a three- to four-mile long bypass brings into question the economic feasibility of this project.

ALTERNATIVES – In mid 1988 work began on a Project Study Report (PSR) for the Richardson Grove Bypass. A Draft PSR was circulated October 18, 1989. This draft report presented the 1968 adopted alternate (Alternate "A"), a bypass of the park on the east side (Alternate "B"), a tunnel alternate (Alternate "C") and a "No Build" Alternate. Due to other priorities, the project was put on hold in October 1991.



- **Alternate "A"** – Adopted in 1968, Alternate "A" is approximately 3 miles in length and runs from just south of the Mendocino/Humboldt County Line to the south end of Smith Point Bridge (Post Mile R5.6). This alternative generally parallels, to the east, the South Fork Eel River within State Park Boundaries. This alternative has two bridges, which cross the river, plus an interchange at the south end of the project to provide access to Route 271 and to Richardson Grove State Park. Nearly one-half of this alternate is within Richardson Grove State Park. Due to its close proximity to the Eel River, the potential for river-related environmental issues is significant. This alternate would generate approximately four million cubic meters of roadway excavation, of which approximately 750,000 cubic meters is excess material. Since

this alternate involves parklands, a 4(f) evaluation is required. Though FHWA approved the 4(f) clearance in 1971, it would be difficult to document that this alternate could meet 4(f) criteria today. The cost of this alternate is estimated at $75-100 million.

- **Alternate "B"** – Alternate "B" is 3.3 miles in length and runs from just south of the Mendocino/Humboldt County Line to the south end of Smith Point Bridge. This alignment ascends a steep 8% grade, crossing the ridge in a deep cut 0.5-mile east of the park boundary. It then descends on an 8% grade and ties into the existing freeway. This alternate would generate approximately 52 million cubic meters of roadway excavation of which approximately 42 million cubic meters is excess material. This alternate was projected with 4-foot shoulders, due to the excessive earthwork quantities. To upgrade to the current design standards for median width and shoulder widths would substantially increase the amount of excavation, therefore causing a significant increase in the cost estimate. The large amount of roadway excavation and excess material would generate significant environmental issues. Since this alternate avoids the park by nearly one-half mile, the park issues should be minimal. However, since there is no known place to dispose of this material, full impacts cannot be assessed. Geotechnical issues will be a major concern due to the extreme height of the cuts, up to 185m (600ft.) There is one bridge (which crosses the South Fork Eel River,) plus an interchange at the south end of the project to provide access to Route 271 and to Richardson Grove State Park. The cost of this alternate is estimated to be $450-600 million.

- **Alternate "C"** – Alternate "C" is approximately 2.9 miles in length and runs from just south of the Mendocino/Humboldt County Line to the south end of Smith Point Bridge. This alignment ascends a 6% grade, crossing the ridge in a tunnel along the easterly park boundary. It then descends on a 5.4% grade and ties into the existing freeway. It is proposed to construct two 4900-foot long tunnels having two 12-foot lanes and 4-foot shoulders left and right. The river crossing and the cuts and fills will generate some environmental issues, though they should be significantly less than either Alternates "A" or "B". Though the tunnel is within the park boundaries, it is below the surface and should provide little concern to the park. Section 4(f) policy pertaining to tunnels states "Section 4(f) would apply only if the tunneling:

(1) will disturb any archaeological sites on or eligible for the National Register of Historic Places which warrant preservation in place, or

(2) causes disruption which will harm the purposes for which the park, recreation, wildlife or waterfowl refuge was established or will adversely affect the historic integrity of the historic site."

A tunnel is a major geotechnical and structural issue, but Caltrans structural engineers have provided an "Advanced Planning Study" for the tunnels.

There is one bridge (which crosses the South Fork Eel River), the tunnels, and an interchange at the south end of the project to provide access to Route 271 and to Richardson Grove State Park. The escalated cost of this alternate is $340-450 million, including approximately $290 million for the tunnels.

- **"Widening of Existing Alignment" Alternate** – Widening of the existing Route 101 to a 4-lane freeway/expressway on its present alignment is not desirable. If Route 101 were widened on its present alignment, it would mean cutting a large number of old-growth redwood trees within and adjacent to Richardson Grove State Park. Having the most popular and developed areas of the park disturbed in this way would dramatically alter the park environment. This alternate would not be supported by the State Park, and is not environmentally feasible.

- **"No Build" Alternate** – The "No Build" alternate would do nothing to alleviate existing concerns. These principal concerns would remain: 1) nonstandard horizontal alignment, 2) no passing opportunity and less than desirable Level of Service, 3) lack of access control, 4) sub-standard sight distance, 5) sub-standard horizontal clearance to trees, and 6) STAA truck restriction. As traffic volumes increase, congestion and level of service would continue to worsen for motorists using the highway, and park visitors would experience a deteriorating park environment.

PUBLIC INVOLVEMENT – The only documented public involvement previous to this feasibility study dates back to the public hearings in the 1960's and reviews with the Sierra Club and the Save The Redwoods League in the 1970's. Attachment A shows

chronology for this project. Over the last 45 years various agencies have been involved with approval of this project, but due to allocation of funds or other reasons this project was sidelined. In 2000, feasibility studies were initiated on "long-standing" projects; Richardson Grove State Park Bypass Project was reopened.

In March 2001, public open house informational meetings were held in Eureka and Ukiah to present the proposed alternatives to the public and to get their input on the feasibility of these projects. Approximately 100 people attended these meetings. Written and verbal comments were received at the meeting and written comments were received via e-mail, letters and comment cards through April 10, 2001. Approximately 80% of the written comment were in favor of the "no-build" alternate. Approximately half of these wrote that it was infeasible due to engineering, environmental and/or economic issues, the other half wanted no improvements to Route 101, regardless of these concerns. Approximately 20% said it was feasible. Eight people wrote that they would like to see the money spent on the railroad improvements through this area. Attachment C has copies of comments received regarding this project. The following table summarizes these comments.

NUMBER OF COMMENTS	COMMENTS
23	Infeasible – High Cost, Significant Environmental Impacts, Engineering Difficulties
24	Infeasible – Not Needed, Unnecessary, No Improvements, Distracts Tourism
6	Infeasible – Put Money into Railroad Improvements
4	Infeasible – Gave no Specific Reason
2	Feasible – Alternative A
0	Feasible – Alternative B
1	Feasible – Alternative C
1	Feasible – No Alternative C
2	Feasible – BUT Would rather Money go to Railroad Improvements
2	Feasible – No Disturbance to the Park
1	Feasible – Improvement to Commerce
3	Feasible – Gave no Specific Reason

FUNDING – One of the major factors to be considered in assessing the feasibility of the Richardson Grove State Park Bypass project is the probability of the project being funded. Two major factors impacting the probability of funding include cost and likely funding sources.

As previously stated, the range of costs for this project is between $75 and $600+ million, depending on the alternative. Alternate "A," estimated at $75-100 million, would have extensive impacts to Richardson Grove State Park, as it traverses the east-side of the Park. It is unlikely that we could construct this alternate. If we do not consider this alternate, the least expensive alternative would cost an estimated $340-450 million.

A $75 million project would be an expensive project for District 1, but it would be less than the cost of the Redwood National Park Bypass or Willits Freeway Bypass. The $340 million alternative would be twice the total cost of the Redwood National Park Bypass, and nearly three times the amount currently programmed for construction of the Willits Bypass project.

Under Senate Bill 45, the Transportation Funding Act, Regional Transportation Planning Agencies are responsible for programming 75% of new facility transportation funds, and Caltrans is responsible for programming the remaining 25% (primarily for interregional connectivity and intercity rail). The Interregional Improvement Program (IIP) lists the projects Caltrans plans to program.

If this project was ready for funding, the project alternatives that bypass Richardson Grove State Park would require approximately one-third or more of the State's Interregional Improvement Program (STIP) for 2002.

Humboldt County Association of Governments (HCAOG) is the Regional Transportation Planning Agency for Humboldt County. Their share of Regional Improvement Program funding for the 2002 STIP is expected to be nearly $25 million, which would not go far if applied to this project.

While both Humboldt County Association of Governments and Caltrans have historically considered a bypass of Richardson Grove as a high priority it is unlikely that either would be able to generate the amount of funding necessary to construct it. Further, while

special funding is a possibility (similar to the funding for the Redwood National Park Bypass), it is considered unlikely.

CONCLUSIONS –

- Alternate "A", while favored in the 1988 study, would not be supported by the California Department of Parks and Recreation. This alternate is not feasible from environmental and economic standpoints.

- Alternate "B", the complete bypass of the park to the east, involves steep grades, narrow shoulders, excessive roadway excavation, and the disposal of 42 million cubic meters of excess material. It is also the most costly. Therefore it is not feasible from engineering, environmental, and economic standpoints.

- Alternate "C" should have the least environmental impact since it crosses the Eel River only once and should not impact the park, therefore it should not be difficult to meet 4(f) criteria. This alternate is cost prohibitive and is not feasible from an economic standpoint.

- Widening the existing Route 101 is not acceptable, as it would seriously affect the environment due to the significant take of old-growth redwoods within a State Park. It would be difficult to document that this alternate could meet 4(f) criteria. This alternate is not feasible from an environmental standpoint, nor would it be supported by the California Department of Parks and Recreation.

RECOMMENDATIONS – It is recommended that due to significant engineering, environmental, and economic issues indicating that all identifiable alternatives are not feasible, further studies involving Richardson Grove State Park Bypass be dropped. While the "No Build" perpetuates existing problems, these problems do not warrant the environmental impacts to the area. Also, assuming funding at these levels is not realistic. It is further recommended that the Route Concept Report be revised to show a 2-lane conventional highway for this section of Route 101, which would mean problem locations would need to be addressed on the existing alignment. Since there is a section

in Mendocino County near Confusion Hill, approximately five miles south, that precludes STAA access, it is not necessary to pursue a solution at Richardson Grove State Park at this time.

ATTACHMENTS:

A. Chronology

B. Plan Map of Alternatives

C. Public Input

1. Letter from Department of Parks and Recreation

2. Comment Summary

3. Copies of Written Comments

D. ACCEPTANCE LETTER (added 9/7/01)

Humboldt County Association of Governments

ATTACHMENT A

CHRONOLOGY

CHRONOLOGY

ROUTE STUDIES – RICHARDSON GROVE AREA

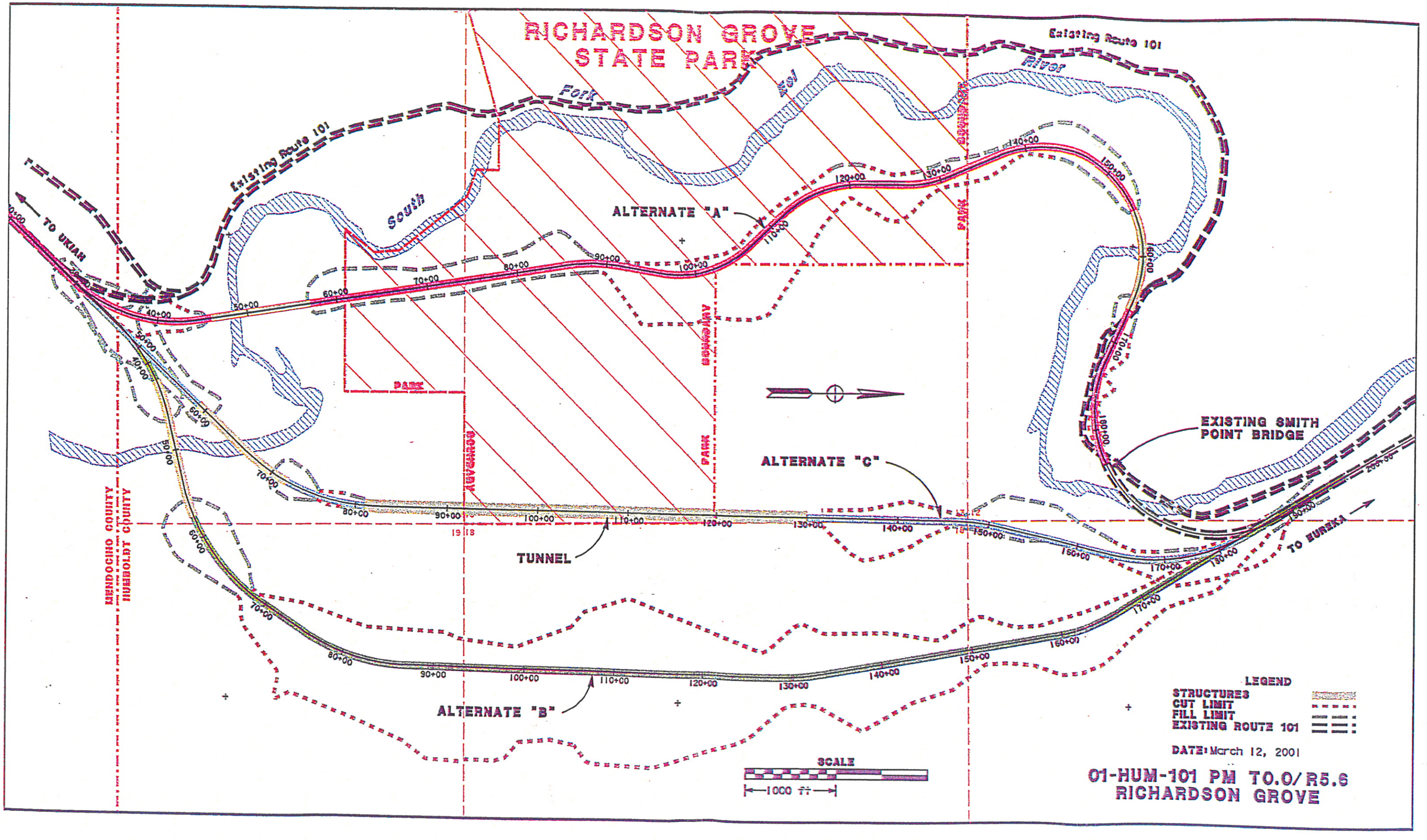
Sept. 27, 1955	Original project report covering 43 miles of U.S. 101 from the Mendocino County Line to Englewood.
Jan. 20, 1956	California Park Commission endorsed the "Low Line" routing (west side of existing highway).
March 21, 1956	California Highway Commission adopted the "Low Line – west side" location.
April 10, 1963	Division of Beaches and Parks requested that the adopted route in the vicinity of Richardson Grove be restudied. This request was for an alignment east of, but immediately adjacent to, the river.
April 19, 1963	Division of Highways requested CHC permission to reopen studies between the County Line and Benbow.
April 24, 1963	CHC granted permission to reopen studies.
May 26, 1964	Supplemental project report presenting Highways' study of Beaches and Parks suggested route.
Sept. 3, 1964	Letter, Womack to Dolder, officially submitting study to Beaches and Parks.
Sept. 18, 1964	Letter, Dolder to Womack, ---"We would of course prefer that the Division of Highways find a route that would completely bypass Richardson Grove, but for the present time, we must suggest that we stay with the currently adopted plan."
April 27, 1965	Helwer requested permission to study an additional alternate along the east side of the river. (High Line) This would eliminate viaduct near the swimming hole, which was objectionable to Beaches and Parks on study line submitted to Dolder.

Dec. 22, 1965	Supplemental project report presenting "High Line" as suggested by Helwer on April 27, 1965.
July 20, 1967	Letter, Legarra to Hanson (B & P), presenting "High Line" plan.
August 14, 1967	Letter, Mott to Legarra, concurring in "High Line." Encourages through cut within the park to provide screening.
Oct. 13, 1967	Report submitted to CHC. They concurred in setting hearing for new adoption.
Dec. 21, 1967	Project discussed with Humboldt County Planning Commission. Favorably received.
Dec. 27, 1967	Project discussed with Humboldt County Board of Supervisors. Favorably received.
Jan. 19, 1968	Public Hearing. General concurrence in the route. Parks and Recreation supported study. Sierra Club suggested possible tunnel. Save The Redwoods League supported routing – DeWitt.
June 25, 1968	New route adopted by California Highway Commission.
June 15, 1971	Highways and Parks meeting in Eureka.
June 25, 1971	FHWA approval of 4(f) clearance.
Nov. 22, 1971	Highways meeting in Sacramento to discuss bridges and stability.
March 3, 1972	Highways meeting with Parks (Herb Heinze and K. G. Moltzner).
April 4, 1972	Highways meeting with Parks (Philbrook and Summerly) review of current efforts.
April 28, 1972	Highways meeting with Parks (Philbrook and Heinze). Study maps to be sent to League and Sierra Club by Philbrook.

May 17, 1972	Joint field review – Highways, Parks and League.
Sept. 15, 1972	Caltrans requested permission from Parks and Recreation (Local Office) to make borings for "Low Level" viaduct. Parks and Recreation did not reply.
July 26, 1988	Drew Irwin, then Project Studies Project Engineer, proposes preparing a PSR for Richardson Grove Bypass.
May 2, 1989	Preliminary review by Ron Nelson, HO Geometrics Reviewer. 60 MPH design speed standards are appropriate. Recommends truck climbing lanes. 4' median will require design exception. If median barrier is warranted, design for wider median.
Sept. 19, 1989	HO Structures provides structures estimates for PSR Alternates "A" "B" and "C".
Oct. 18, 1989	"Draft" PSR circulated for "In-House" review.
Jan. 30, 1990	PDT Meeting. See project files for minutes. Decision to (1) study additional avoidance alternatives to lessen grades and balance earthwork (2) estimate costs for a 2-lane facility on the adopted alignment and (3) after doing the above, PDT to meet again to determine next step.
Feb 1990 – Oct. 1991	Various people worked on project studying avoidance alternatives to east and west. The 14' median on adopted alignment became Alternate D and costs were estimated for it. No other alternatives were completed. Job put on hold at some point due to other priorities.
Oct. 1, 1991	Studies re-opened. Strategy was to bring previous alternates up to date in costs and include a 14' median. Also, a 2-lane facility and an additional avoidance alternative were to be studied and finalized. See memo in project files.
Jan. 8, 1992	Project put on hold. A PY estimate was made on what it would take to finish the PSR and management decided other projects took priority. See memo in project files.

ATTACHMENT B

PLAN MAP OF ALTERNATIVES


RICHARDSON GROVE
STATE PARK
Existing Route 101
Existing Route 101
South
Fork
Eel
River
TO UKIAH
ALTERNATE "A"
ALTERNATE "B"
ALTERNATE "C"
TUNNEL
EXISTING SMITH
POINT BRIDGE
TO EUREKA
PARK
PARK
PARK
MENDOCINO COUNTY
HUMBOLDT COUNTY
LEGEND
STRUCTURES
CUT LIMIT
FILL LIMIT
EXISTING ROUTE 101
DATE: March 12, 2001
SCALE
1000 ft
01-HUM-101 PM T0.0/R5.6
RICHARDSON GROVE