historical overview and assessment of significance of stone walls and rock work along glacier point road

GLACIER POINT ROAD
YOSEMITE

NATIONAL PARK • CALIFORNIA

HISTORICAL OVERVIEW AND ASSESSMENT OF SIGNIFICANCE OF STONE WALLS AND ROCK WORK ALONG GLACIER POINT ROAD IN YOSEMITE NATIONAL PARK

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PREFACE

The purpose of this report is to provide a historical overview and preliminary assessment of significance of the stone walls and rock work along Glacier Point Road in Yosemite National Park. As part of the environmental assessment preceding the implementation of a comprehensive design package (Yosemite National Park, Package 843B-06, Comprehensive Design) for the modernization and renovation of the road corridor, it was determined that the stone walls and rock work be researched, examined, photographed, and evaluated regarding their potential eligibility for listing on the National Register of Historic Places. Thus, this report will be divided into four sections: (1) historical documentation; (2) photographs of existing conditions; (3) assessment and evaluation of significance and integrity; and (4) recommendations for management.

I wish to thank James B. Snyder, historian, and Linda Eade, research librarian, for aiding my research in the park records at the Yosemite National Park Research Library. My thanks also go to Terry Gess, chief, maintenance and engineering, and Ralph Parker, engineering operations equipment foreman, for sharing their knowledge of the history of maintaining Glacier Point Road.

Harlan D. Unrau
October 1989

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I. Historical Documentation

A. Introduction

The Glacier Point Road starts at Chinquapin on the Wawona or South Entrance Road (outside the south park boundary this road is State Highway 41), about midway between Yosemite Valley and Wawona, and extends 15.80 miles to Glacier Point. The two-lane road maintains easy grades as it passes through fir and pine forests from 6,039 feet at Chinquapin to 7,214 feet at Glacier Point, the last two miles being steeper, narrow, and winding.

The road is usually closed by snow in the late fall and is not reopened until spring. During the winter months, however, it is kept open to the ski area at Badger Pass, five miles east-northeast of Chinquapin.

The present Glacier Point Road was completed by the Bureau of Public Roads under contract in 1935, replacing the original wagon road built in 1882. Remnants of the old route are still visible in many places, while in other areas the new road closely follows the alignment of the old.[1] (See the following page for a map showing the new Glacier Point Road and the approximate route of the original road.)

B. Original Glacier Point Road: 1882-1930s

By the late 1860s Glacier Point had become one of the focal points of interest for tourists wishing to view the spectacular scenery of Yosemite Valley. In 1869 Charles F. Peregoy, a California '49er who had begun cattle ranching in the area, constructed the Mountain View House as a hotel for visitors traveling the Wawona-to-Yosemite Valley trail. Located in present Peregoy Meadow the hotel provided overnight accommodations for tourists who traveled to Glacier Point the next day, the trail being the only access to that majestic view.

In 1871 James McCauley, an Irishman who had come to California to mine six years earlier, contracted with the Yosemite commissioners to build a toll trail from the south side of the Yosemite Valley floor up to Glacier Point. He selected John Conway, one of the most notable early trail builders in Yosemite, to survey and construct the trail. When the Four-Mile Trail was completed at a cost of $3,000 in 1872, Peregoy began construction of a building at Glacier Point for tourist accommodation, but before its completion he disposed of it to McCauley. Later in 1878 McCauley,

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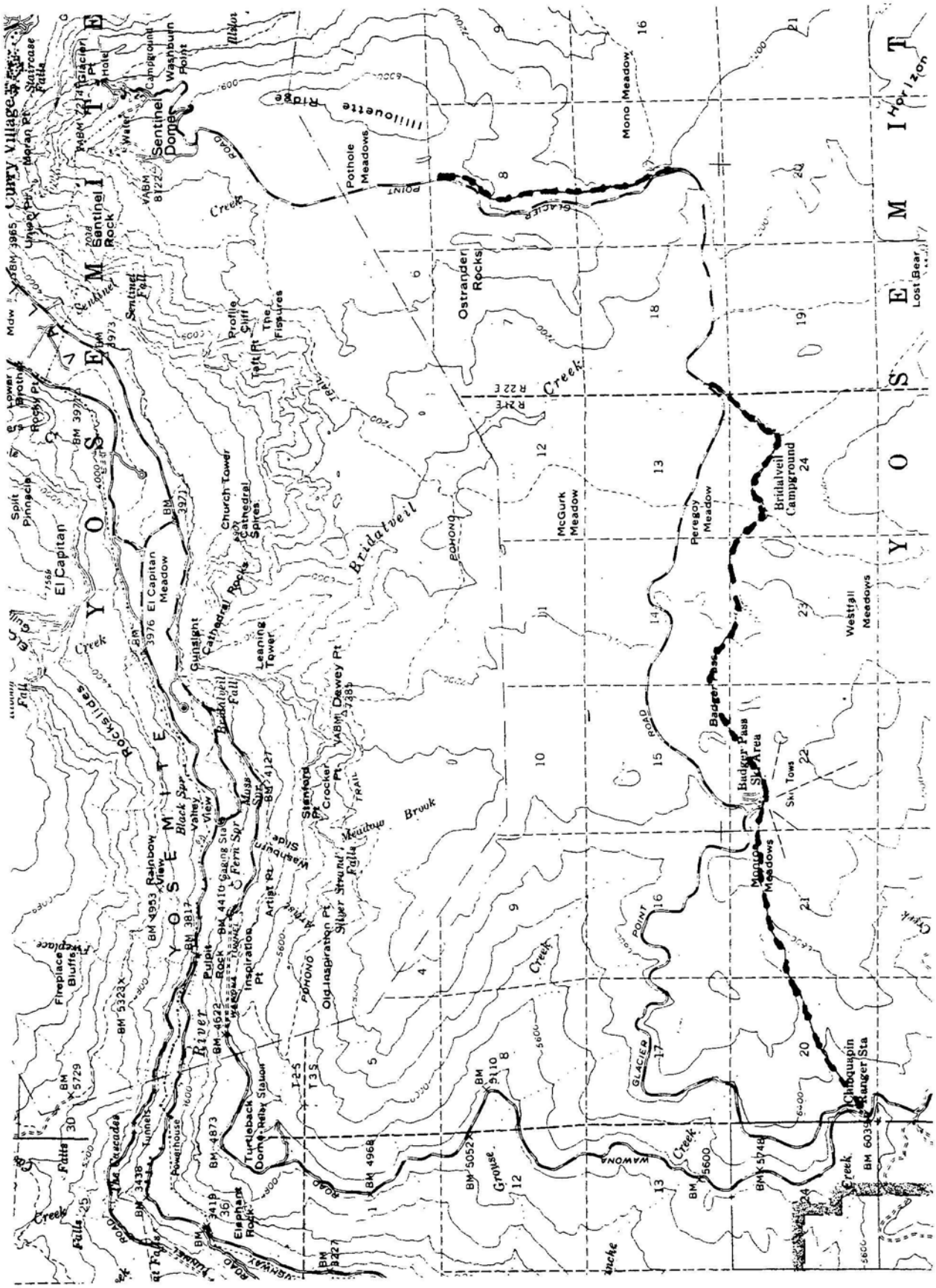
1. Richard P. Ditton and Donald E. McHenry, *Yosemite Road Guide: Keyed to Roadside Markers* [Revised by Bill Dengler, Linda Eade, and John Hollanrake] (Yosemite National Park, Yosemite Natural History Association, 1981), pp. 13-18.



Broken line indicates approximate route of original Glacier Point Road where it deviates from alignment of present road.

who had recently sold the Four-Mile Trail to the state of California for $2,500, built a two-story hotel, known as the Mountain House, at Glacier Point.

Meanwhile, during the fall of 1874, the Yosemite commissioners granted A.H. Washburn, E.W. Chapman, and W.F. Coffman and Company of Mariposa the right to extend their stage toll road from Wawona to Yosemite Valley, thus completing a southern access route from Mariposa to the valley. The Wawona Road was completed on July 22, 1875, bypassing the earlier Wawona-to-Yosemite Valley trail several miles to the west via Chinquapin.

Increasing visitation to Glacier Point led to calls for more efficient transportation to that spot. In 1882 the Washburn interests, which had developed and owned the Wawona resort, employed Conway to construct a 16-foot-wide wagon road from the Wawona Road at Chinquapin to Glacier Point. The road, which cost $8,000 to build, had grades ranging up to twenty percent over its fourteen mile route.[2]

During the quarter century between the mid 1870s and the late 1890s the New England-bred Washburn brothers – Henry, John, and Edward – consolidated their monopolistic interests in providing tourist services and accommodations at Yosemite. By 1899 they not only operated the Wawona Hotel but had significant financial stakes in the other two operating hotels at Glacier Point and Yosemite Valley (Sentinel). Through the auspices of their Yosemite Stage and Turnpike Company the Washburn interests also owned and operated a significant proportion of the stage lines and roads used by visitors to the national park.

The Washburn interests continued to own and maintain the Glacier Point Road as a toll operation until 1917.[3] Maintenance of the road included renovating the dirt route each late spring or early summer with horse teams and hand tools. Other routine maintenance improvements included filling ruts and washouts, removing debris and windfall, spreading gravel, and sprinkling the roadbed.[4] According to newspaper reports, the road was opened each spring once the snow was

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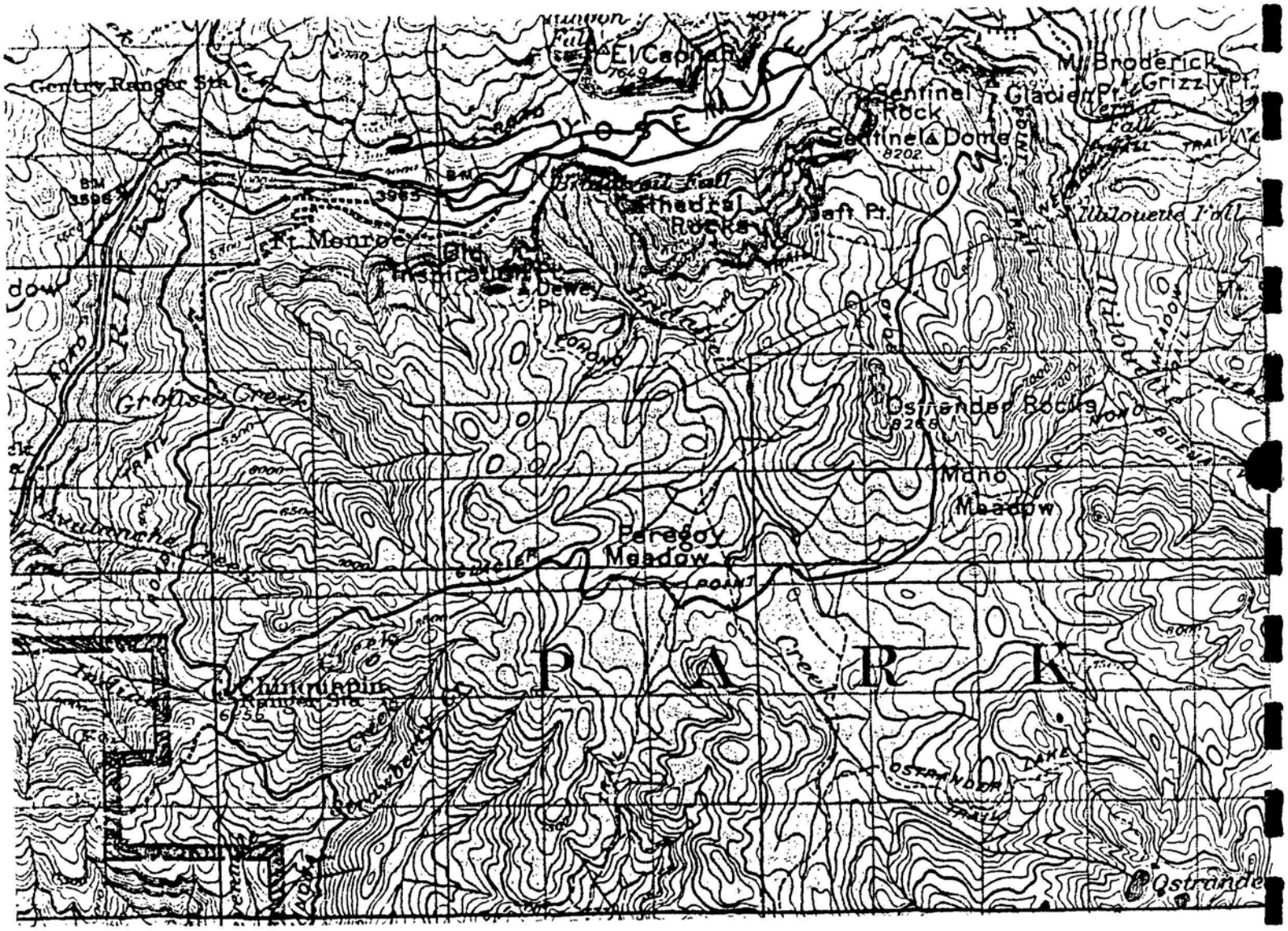
2. U.S. Department of the Interior, National Park Service, *Historic Resource Study, Yosemite: The Park and Its Resources,* by Linda Wedel Greene, September 1987, 3 vols., I, 80, 106-10, 123-24, 138-39, 156-57; Shirley Sargent, *Yosemite & Its Innkeepers* (Yosemite, Flying Spur Press, 1975), pp. 15-16; and Hazel Merillat Whedon, "The History of the Roads, Trails, and Hotels In and Near Yosemite National Park" (Unpublished M.A. thesis, University of Southern California, 1934), pp. 60-61.

3. W.B. Lewis, Supervisor to Superintendent of National Parks, Department of the Interior, October 28, 1916, in Yosemite – Roads, #8, 979.447, Y-20, Yosemite National Park Research Library (hereinafter referred to as YNPRL).

4. *Historic Resource Study, Yosemite,* I, 430-31, and Sargent, *Yosemite & Its Innkeepers,* p. 17.



U.S. Geological Survey Quad Map, 30 Minute, 1909, showing route of original Glacier Point Road.

cleared and was "in good condition and in daily use." In June 1913, for instance, the *Fresno Republican* reported that the Glacier Point Road was "now in far better condition than many of the mountain roads which are being daily traversed by many automobiles."[5] During the spring and summer of 1914 the Glacier Point Road was improved and opened to use by automobiles.[6]

During the summer of 1917 the Glacier Point Road was acquired by the U.S. Government. In connection with the revision of the concession of the Yosemite Stage and Turnpike Company and as a condition for granting an extension of its privileges, the company turned over to the government title to the Wawona toll road system extending from Wawona to Fort Monroe, including the 14-mile Glacier Point Road. The tolls on the road were abolished by the government.[7]

That same year the Desmond Park Service Company completed the new Glacier Point Hotel, a three-story shingle-covered structure with a Swiss chalet emphasis costing $350,000. The new hotel, with the old Mountain House serving as a cafeteria and annex, provided 90 guest rooms.[8]

After 1917 the National Park Service maintained the Glacier Point Road much as the Washburn interests had done. Annual maintenance operations on what continued to be an essentially rutted dirt wagon road included commencement of snow removal around Memorial Day, filling ruts and washouts, removing debris and windfall, spreading gravel, and sprinkling the roadbed to keep the dust down. With increasing visitation and motor vehicular traffic in the park, maintenance of the park road system became a critical problem for park administrators by the early 1920s. According to Superintendent Washington B. Lewis in 1921, road maintenance was "one of the greatest, if not the greatest," problems the park was "facing in the constantly increasing travel which it is experiencing." He elaborated further:

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5. *Fresno Republican*, June 27, 1913, in Yosemite – Roads, #11, 979.447, Y-20, YNPRL.

6. *San Francisco Examiner*, May 9, 1914, in Yosemite – Roads, #27, 979.447, Y-20, YNPRL.

7. *Annual Report of the Director of the National Park Service, 1918*, p. 132.

8. U.S. Department of the Interior, National Park Service, *National Park Service Rustic Architecture. 1916-1942*, by William C. Tweed, Laura E. Soulliere, and Henry G. Law, February 1977, p. 16; Sargent, *Yosemite & Its Innkeepers*, pp. 49-50, 55-57, 61-62, 65; Whedon, "History of the Roads, Trails, and Hotels In and Near Yosemite National Park," pp. 53-54, 60-61; and *Historic Resource Study, Yosemite*, II, 612-18.

> . . . The thousands of dollars the government is forced to spend annually in order to keep the park roads in a passable condition represents largely waste, for nothing of a permanent nature in the way of improvement is accomplished. The beginning of each season finds conditions essentially the same as those at the beginning of the previous year, and the work done during each season is largely a repetition of that done the pervious year, except that, as the travel increases, it is more and more intense and more and more money must be spent. There is only one solution to the problem and that is permanent improvement, which means a heavy initial expenditure but which will eliminate much of the heavy expenditures of maintenance which are now being borne and which must continue under present methods.[9]

Few substantial improvements were made to the Glacier Point Road until 1929. That summer, with the aid of increased appropriations, some 66 miles of park roads, including the Glacier Point Road, were oiled as a dust prevention measure. The park superintendent reported that this improvement "was the resource of profound satisfaction among park visitors, especially those expecting the intolerable dust previously encountered."[10]

During the early 1930s park maintenance crews undertook more extensive annual maintenance operations on the Glacier Point Road. Each year the road was graded, rocks, slides, and windfall removed, and surfacing materials applied before dustproofing with light oil.[11] These annual improvements so improved the road that Superintendent Charles G. Thomson estimated that maintenance expenditures would be cut by 75 percent.[12]

C. Construction of New Glacier Point Road: 1930-1935

1. Surveys During 1930-1931

By 1930 increasing park visitation and consequent heavy summer tourist traffic necessitated a modern highway to Glacier Point. It was estimated that an average of 100,000 tourists visited Glacier Point each year by road or trail, the majority being hikers using the four trails leading from the Yosemite Valley floor. Traffic studies indicated that only about 10 percent of Wawona Road automobile traffic attempted the trip to Glacier Point. Thus, some 12,000 automobiles (or 24,000 trips) traveled over the existing road during each tourist season which

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9. *Annual Report of the Director of the National Park Service, 1921*, p. 192.

10. *Annual Report of the Director of the National Park Service, 1929*, p. 145.

11. Superintendent's Monthly Narrative Reports, Yosemite National Park, June, July, 1930, n.p.; July 1932, p. 6; and August 1933, p. 7; YNPRL.

12. *Ibid.*, June 1933, p. 6, YNPRL.

generally extended from June 1 to December 1. The growing popularity of Glacier Point, coupled with improvements to the Wawona Road and construction of a new campground at Glacier Point in 1930, would place increasing demands on the existing Glacier Point Road.

A new highway was required to replace the existing "obsolete mountain road." Although improved from time to time, the original wagon road was little more than a one-way road with poor alignment, sharp switchbacks, and grades of up to 20 percent. The old road bed had "a practically flat cross section, without ditches" and varied between 10-15 feet in width with numerous turnouts. Surfaced full width with a fuel oil mix of local materials, the old road generally lay in canyons, giving it "very poor" exposure.[13]

During 1930-31 surveys for the new Glacier Point Road were conducted under the supervision of two Bureau of Public Roads (BPR) engineers – H.S. Tolen, Resident Engineer, and Karl E. Nissi, Senior Engineering Inspection Foreman. Park Superintendent Thomson and Resident Landscape Architect John W. Wosky assisted in the survey efforts. The total survey comprised 22.3 miles in length from Chinquapin to Glacier Point. From Bridalveil Creek, at a point approximately 8.75 miles from Chinquapin, the BPR survey provided for a loop via Sentinel Dome, Glacier Point, and Mono Meadows.

During September-November 1930 reconnaissance and stadia surveys were made from Chinquapin to Bridalveil Creek southeast through the Alder Creek Saddle and northeast by way of Grouse Creek. The Alder Creek route was found to be the better of the two routes from the standpoint of engineering and construction, because it would result in less excavation, a shorter distance by 1.5 miles, 1,200 degrees less curvature, better exposure, and a 200-foot lower saddle at the summit. The first four miles of this route were through logged off land, however, making it

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13. United States Department of Agriculture, Bureau of Public Roads, District No. Two, "Location Survey Report (August 1931) on Yosemite National Park – Route No. 5, Wawona Road-Glacier Point, Mariposa County, California, by Karl E. Nissi, Senior Engineering Inspection Foreman, August 1931, p. 1; United States Department of Agriculture, Bureau of Public Roads, District No. Two, "Location and Design Report, Bridalveil Creek-Sentinel Dome Saddle Section, Glacier Point Road – Yosemite 5-A2, Yosemite National Park, Mariposa County, California," by T.M. Roach, Assistant Highway Engineer, March 10, 1933, pp. 1-4; United States Department of Agriculture, Bureau of Public Roads, District Two, "Final Construction Report on the Chinquapin-Bridalveil Creek Section of the Glacier Point Road, Yosemite Park Project No. 5-A1-Gr., Yosemite National Park, Mariposa County, California," by T.M. Roach, Assistant Highway Engineer, April 3, 1934, pp. 1-3; and United States Department of Agriculture, Bureau of Public Roads, District Two, "Final Construction Report, Base Course Surfacing, Chinquapin-Bridalveil Creek Section, Glacier Point Road, Yosemite Park Project NR 5-A1, Base Course, Yosemite National Park, Mariposa County, California," by F.J. Hughes, Assistant Highway Engineer, February 3, 1936, pp. 1-3; YNPRL.

Prior to the decision to reconstruct a new road to Glacier Point, the Park Service considered construction of a mechanical cableway from Yosemite Valley to the point. For more data on this topic, see Robert C. Pavlik, "In Harmony With the Landscape: A History of the Built Environment of Yosemite National Park, 1915-1940" (Unpublished Ph.D dissertation, University of California, Santa Barbara, 1986), pp. 116-17.

undesirable from a landscape perspective. Thus, the NPS adopted the east-northeasterly route via Grouse Creek.

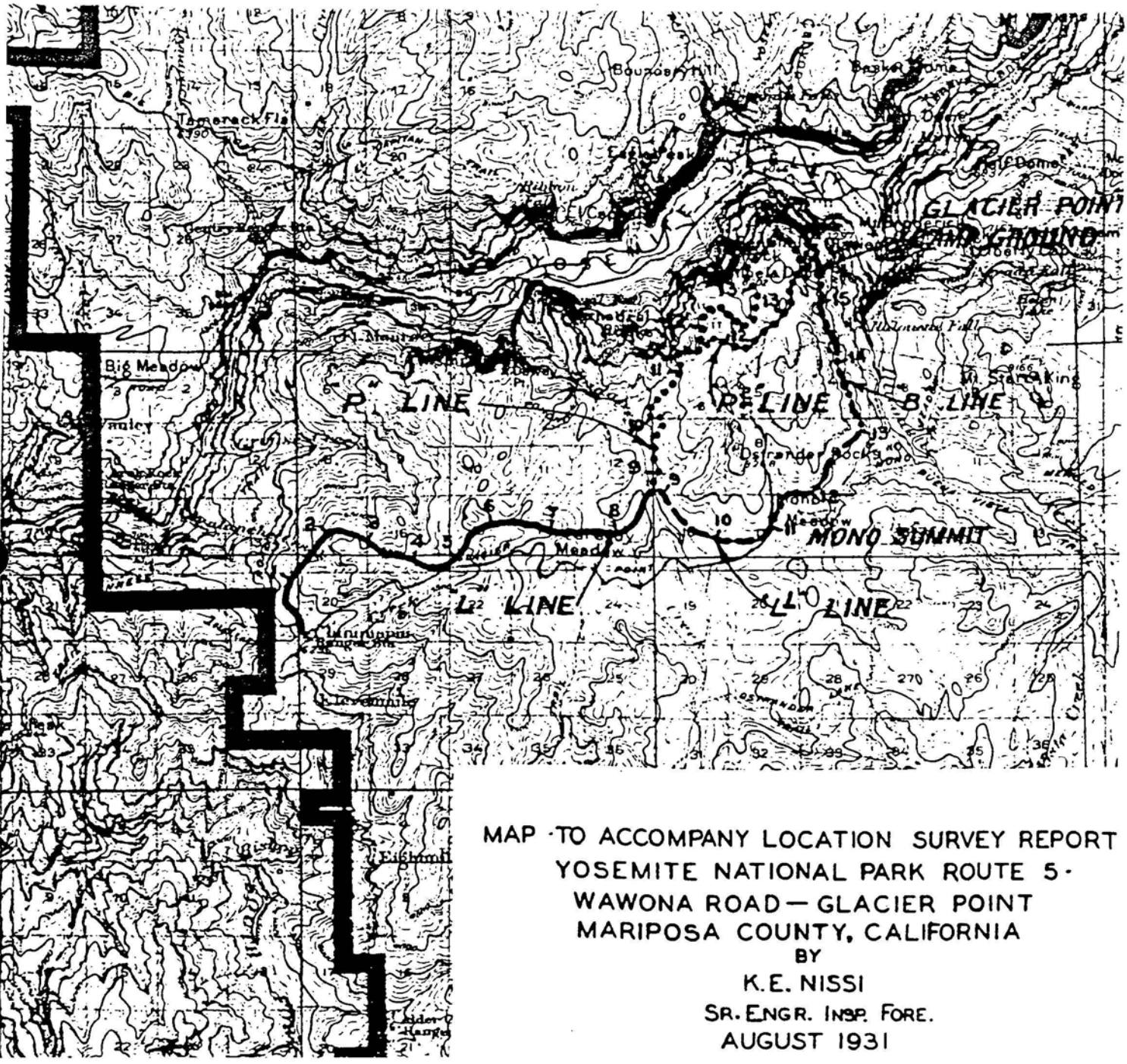
From Bridalveil Creek to Glacier Point the BPR engineers proposed to construct two one-way roads, one around Sentinel Dome to the north and the other passing down the Illilouette Canyon to the south, thus making a loop road. It was recommended that either route could be dropped in favor of a two-way road on the other line. Because of considerable discussion about the loop-road idea, it was determined that a location line would be carried only to Bridalveil Creek, and that preliminary lines would be run on the remaining section.

By mid-November a location line had been completed from Chinquapin to Bridalveil Creek. Preliminary lines to a point 3.6 miles from Bridalveil Creek, designated as "P" line on the Sentinel Dome route, and 6.4 miles of the "B" line on the Illilouette Canyon route had been run.

A heavy snowfall terminated the survey in mid-November 1930 after which the field data was placed in the BPR field office in Oakhurst. Several days later the hotel in which the field office was located was destroyed by fire. Thus, all the notes and plans for the new Glacier Point Road were lost.

During the spring and summer of 1931 the entire survey was retraced. Two miles of the Illilouette Canyon line to Bridalveil Creek to a connection with the existing Glacier Point Road at Mono Summit were located. An additional 0.63 mile of the "B" line and 2.89 miles of the "P" line were run to complete them to Glacier Point. Two alternatives to the "P" line were run: "P2" from the vicinity of Taft Point around the south side of Sentinel Dome to Glacier Point, a distance of 2.33 miles; and "P3" from the Glacier Point campground to a point near the existing parking area, a distance of 1,004 feet, for a proposed tramway. (See a map on the following page showing these lines.)

The completed survey provided for minimum 200-foot radius open curves and 300-foot radius blind curves, and a maximum grade, compensated for curvature, of 6 percent. The 16-foot forest highway standard, approved in 1929, was adopted for the roadway width between Chinquapin and Bridalveil Creek, thus giving an overall width of 22 feet from shoulder to shoulder. Provision was made for standard curve widening on all curves of 1,000 feet radius or less. The width standard for the remainder of the road was not determined during the survey, pending future decisions on the final route between Bridalveil Creek and Glacier Point.



MAP TO ACCOMPANY LOCATION SURVEY REPORT
YOSEMITE NATIONAL PARK ROUTE 5
WAWONA ROAD — GLACIER POINT
MARIPOSA COUNTY, CALIFORNIA

BY

K.E. NISSI
SR. ENGR. INSP. FORE.
AUGUST 1931

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF PUBLIC ROADS

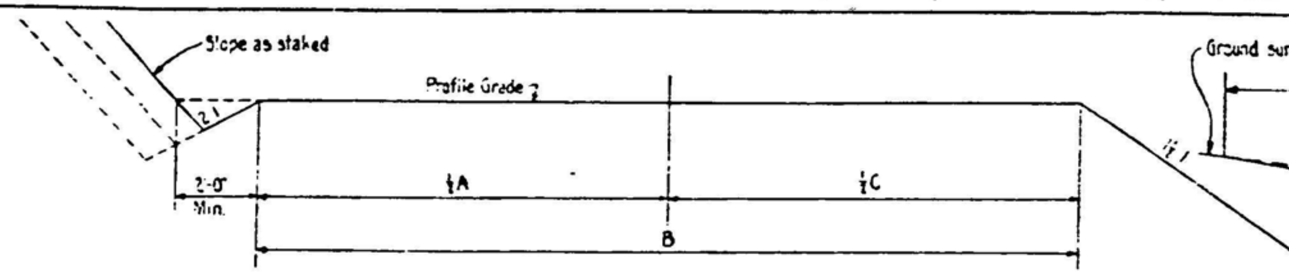
STANDARD CROSS SECTION

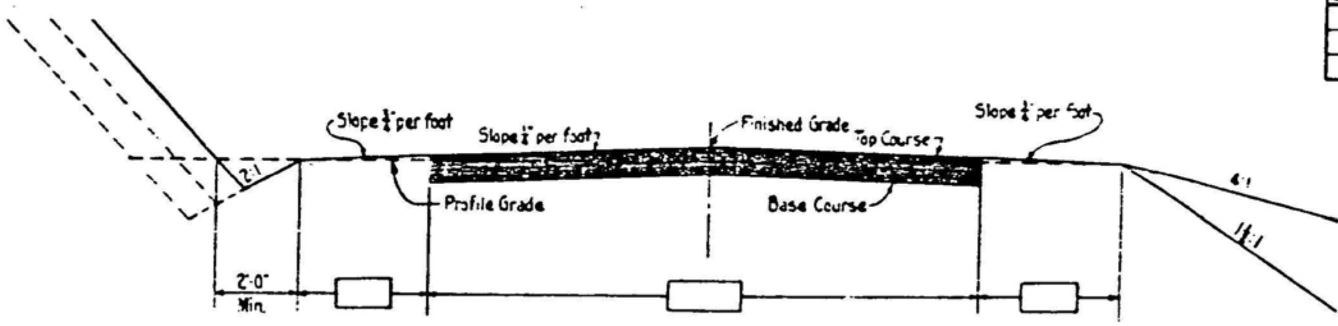
FOREST HIGHWAYS

AS REVISED FOR 1929 CONSTRUCTION

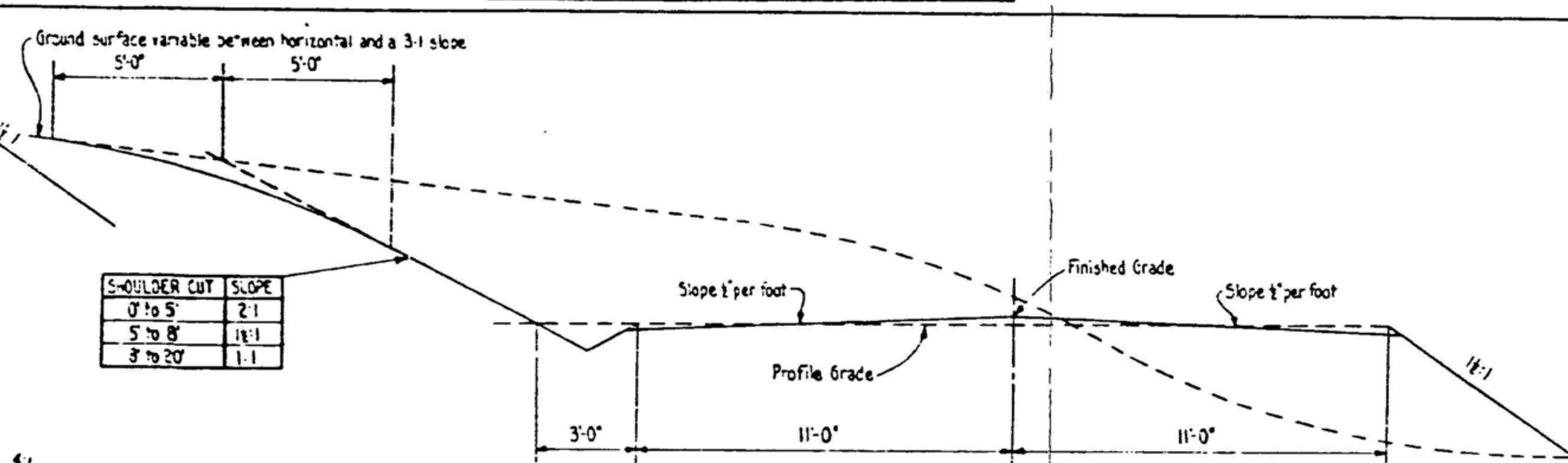
DISTRICT NO. 2 STANDARD ROADWAY 16 Ft.
PROJECT 5-A1, Grading (Sta.0+00-461+00 and connection to Wawona Road (Sta.992+00.00-1005+66.31)
NATIONAL PARK ~~FOREST~~ Yosemite
COUNTY Mariposa
STATE California
Standard Roadways are as designated in the table and imply the corresponding dimensions shown in the table

STANDARD ROADWAY	DIMENSIONS CUT A	SIDEHILL B	FILL C	½A	½C
~~12~~	~~18~~	~~18~~	~~18~~	~~9~~	~~9~~
~~14~~	~~20~~	~~20~~	~~20~~	~~10~~	~~10~~
16	22	22	22	11	11
~~18~~	~~24~~	~~24~~	~~24~~	~~12~~	~~12~~



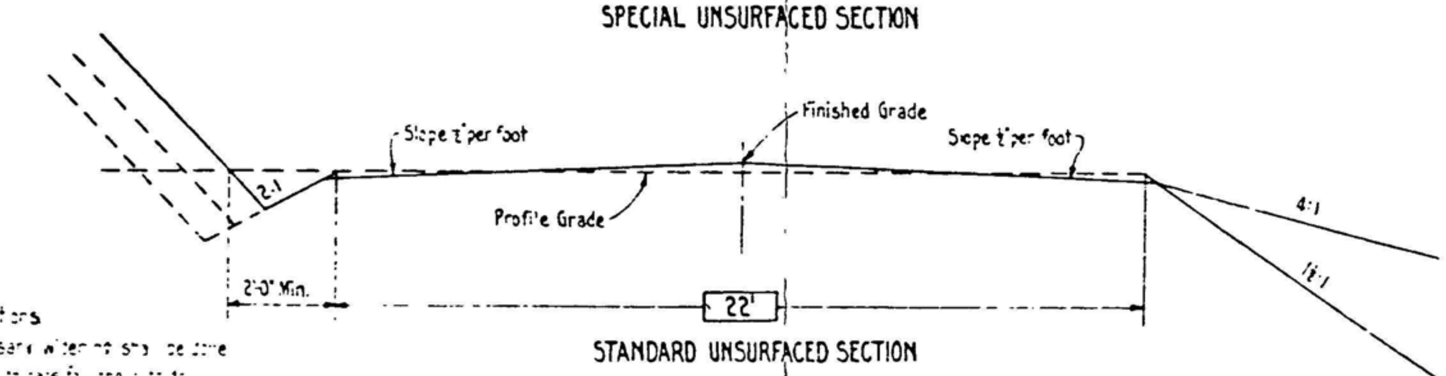


CRUSHED ROCK CRUSHED GRAVEL OR OTHER SURFACE COURSE
(Does Not Apply To This Contract)



SHOULDER CUT	SLOPE
0' to 5'	2:1
5' to 8'	1½:1
8' to 20'	1:1

SPECIAL UNSURFACED SECTION



STANDARD UNSURFACED SECTION

All curves are to be widened and superelevated as per instructions.
Where drainage conditions require larger side ditches the necessary widening shall be done in thru cuts on sidehill location where there will be no drainage to care for the outside three (3) foot shoulder of the adjacent fill shall be carried through with a one (1) foot ditch.
In cuts on rolling terrain and [illegible] carry through the three (3) foot shoulders of the adjacent fills with additional side ditches as necessary for drainage conditions.
Increase or decrease thickness of surfacing as local conditions may require.
Formula for Superelevation — $S = \frac{1}{4}(50 - \frac{R\Delta}{3})$
S = Superelevation in feet per foot width
R = Radius of curve in feet.
Δ = Central Angle in degrees.

Maximum Superelevation = 0.125' per foot width of roadway.

CRUSHED ROCK
OR
CRUSHED GRAVEL
(OR OTHER SURFACE COURSE)
(As per Specifications)
One Course
Top Course
Base Course

APPROVED L. I. Hewes DATE Jan. 7, 1926
Revised Jan. 12, 1929

The BPR surveyors determined that a 40-foot-long bridge would be needed over Bridalveil Creek. Corrugated metal pipe culverts were designated for all other drainage structures. Major culverts, consisting of double 36-inch pipes, would be required at Avalanche and Grouse creeks.

In the "Location Survey Report" issued by Engineer Nissi in August 1931 he concluded that a "road on both the Sentinel Dome and the Illilouette Canyon routes would make an interesting and popular loop drive." The loop "could be constructed on a narrow standard for one way traffic." However, if only one road was constructed he felt that the Illilouette Canyon route would "probably be chosen as better alignment with less grades" could "be obtained than on the Sentinel Dome route." Some three miles of this route could also "be used as part of a future road to Little Yosemite."[14]

2. Construction of Chinquapin-Bridalveil Creek Section: 1932-1933

Funds for construction of the Chinquapin-Bridalveil Creek section of the new Glacier Point Road were made available from regular park road appropriations on April 8, 1931. Initially, $332,000 was designated for construction and $18,000 for engineering.

The project, which called for construction of 8.601 miles of roadway, was advertised in the September 4, 1931, issue of *Southwest Builder and Contractor* (Los Angeles) and the September 10, 1931, issue of *Western Construction News* (San Francisco). Bids were opened on September 22 in the BPR District Office in San Francisco. Thirteen bids were received, but after some delay the low bidder was unable to furnish bond. As the second bid was $15,000 above the engineer's estimate, it was determined to readvertise for new bids.

The project was advertised a second time in October 1931, and bids were opened on October 29. The lowest of six bids was submitted by Granfield, Farrar & Carlin. The contract was approved by the Secretary of the Interior on March 10, 1932, and the contractor notified to proceed on May 17.

Three days before that date the contracting firm started erection of a camp at Chinquapin under the direction of its superintendent Carl Gilger. The contractor's mess, including construction

14. *Annual Report of the Director of the National Park Service, 1930,* p. 164, and U.S. Department of Agriculture, Bureau of Public Roads, "Location Survey Report (August 1931) on Yosemite National Park – Route No. 5," pp. 1-12, YNPRL. For more data on the involvement of the Bureau of Public Roads in the construction and improvement of Yosemite National Park roads during the 1920s and 1930s see *Historic Resource Study, Yosemite,* II, 552-54.

and maintenance of the camp, was sublet to the California Commissary Company, the first time such an arrangement had been implemented in the park in recent years. The subcontract continued to be a source of trouble, as the mess operators failed to provide satisfactory meals or maintain a sanitary camp "unless supervised in every detail." Finally on October 19, 1932, fire destroyed the entire Chinquapin camp, and the California Commissary Company relinquished its contract. Temporary housing for the workers was then provided at Fish Camp.

Clearing of the route's right-of-way was sublet to A. Mitchell of Sacramento. Operations began at Chinquapin on May 17, the contractor planning to push the clearing and burning as fast as possible behind the receding snow line to avoid fire hazard. These plans went awry, and after three small fires had escaped the fire lines because of improper patrolling, the principal contractor was instructed to place an experienced man in charge of the burning.

Excavation for the roadway commenced in June 1932 with the use of four power shovels, ten trucks, six tractors, and seven compressors. The portion of the route just above Chinquapin contained the bulk of heavy rock excavation and was thus handled by two shovels, one pioneering and the second cleaning out the common material and excavating the rock cuts after blasting.

Following the excavation operations rough grading was commenced. Grading of the large plaza at Chinquapin, which provided a Y-connection to the Wawona Road and included parking and planting areas, was included in the contract. Before excavation for the plaza could be completed, however, severe winter weather caused the contractor to terminate operations on November 29.

By that date the entire roadway project had been excavated and virtually all rough grading was completed. All excavation except borrow material for topping was completed on the first four and the last two miles, the central portion still requiring some excavation.

Construction of the road resumed on June 5, 1933, with the use of three power shovels. Finishing operations commenced at the upper end of the project on July 11, the crew working toward the lower end of the job. The finishing work included rough shaping the grade "with a sixty Caterpillar with bulldozer," scarifying, removal of oversize rock, and "final blading with a 12-foot Austin grader, pulled by a sixty Caterpillar."

A 3-foot by 4-foot reinforced concrete box culvert was installed at Avalanche Creek, but all other culverts were corrugated metal pipe with cement rubble masonry headwalls as needed. In

addition, some 750 feet of 12-inch perforated metal pipe and some 2,200 feet of 6-inch porous tile drain were installed in sections where subsurface water was encountered.

The entire job was completed and accepted by NPS representatives on August 23, 1933. The contractor used only 78 percent of the allotted 350 days. All told, the contractor was paid $305,759.40 for the project.[15]

When the project was completed Yosemite Superintendent Thomson reported that the "entire surface of the road is very dusty." Thus, the old road would be kept open "until a better traveling surface" was available on the new section. Funds for surfacing the roadway were already provided in the "public works program."[16]

3. Base Course Surfacing and Oiling of Chinquapin-Bridalveil Creek Section: 1934-1935

During the summer of 1933 BPR engineers prepared plans and specifications for base course surfacing of the Chinquapin-Bridalveil Creek section of the new road. The plans called for placing a 7-inch loose measurement crushed rock base course to a width of 18 feet on the prepared subgrade. The plans provided for tapering the base course to the shoulder of the roadway. The crushed rock base course was to be spread and compacted in two equal 3-1/2-inch layers, watered, and then rolled.

Funds for the project ($108,000) were made available from Park Service allotments provided by the National Industrial Recovery Act. The project was advertised on September 23, 1933, and three bids were opened in San Francisco on October 10. The low bid, submitted by the Granite Construction Company of Watsonville, California, was approved by the Secretary of the Interior on October 26, and work commenced on November 8.

During the next four weeks the contractor constructed an access road from the highway to a quarry, located some 1,000 feet south of the new road near Grouse Creek. Foundation pits for

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15. U.S. Department of Agriculture, Bureau of Public Roads, "Final Construction Report on the Chinquapin-Bridalveil Creek Section of the Glacier Point Road, Yosemite Park Project No. 5-A1-Gr.," April 3, 1934, pp. 1-24, and Superintendent's Monthly Narrative Reports, Yosemite National Park, October 1931, p. 8; November 1931, p. 8; May 1932, p. 7; June 1932, pp. 8-9; July 1932, p. 10; August 1932, p. 8a; October 1932, p. 7; November 1932, p. 7; June 1933, p. 9; and July 1933, p.9; YNPRL.

16. Superintendent's Monthly Narrative Report, Yosemite National Park, August 1933, p. 7, YNPRL.

crushing machinery were excavated, and stripping of the quarry commenced before snow closed operations on December 3.

Work resumed on May 1, 1934, and a camp was erected near the quarry. A deficiency in fines was remedied by adding earth binder from a pit a short distance from the quarry. Progress in opening the quarry and erecting the crushing plant was hampered by bad weather in May and June. Insufficient power problems were rectified by adding a 65-horsepower engine to the original power plant. Production of crushed rock did not begin until July 2, and the last material was placed on the road on September 15. The mixing, rolling, and cleanup work was completed two days later.

Because of extremely light snowfall the previous winter the flow of Bridalveil Creek, the only source of water for use in preparing subgrade and mixing the base course material, diminished rapidly during the summer. To resolve this problem the contractor installed a 4-inch siphon at Ostrander Lake, the source of Bridalveil Creek, to raise water over the rim of the lake into the creek channel. Grouse Creek, adjacent to which the contractor had constructed camp, dried up early in July, making it necessary to haul water from Bridalveil Creek for camp and plant use.

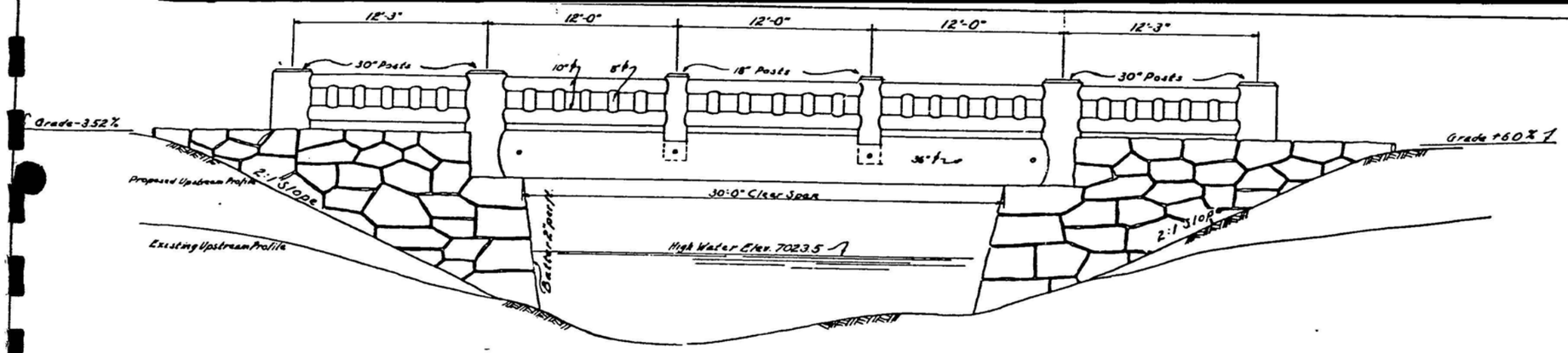
As planned the base course was constructed in two 3-1/2-inch layers, loose measurement, except on one section 2,000 feet in length where an extra layer was placed and harrowed into the subgrade to stabilize the fine disintegrated granite containing a high percentage of mica. Before processing, the subgrade had formed in laminated layers that slipped upon one another when the subgrade was rolled.

The project was completed September 17, 1934, and the contractor paid $70,789.15 for the job. All labor except for supervision was employed through the Yosemite office of the National Reemployment Service. Hours were limited to 130 per person per calendar month, in accordance with contract provisions designed to provide maximum employment with stipulated minimum wages. Two crews, each working five hours per day, were employed throughout the project.[17]

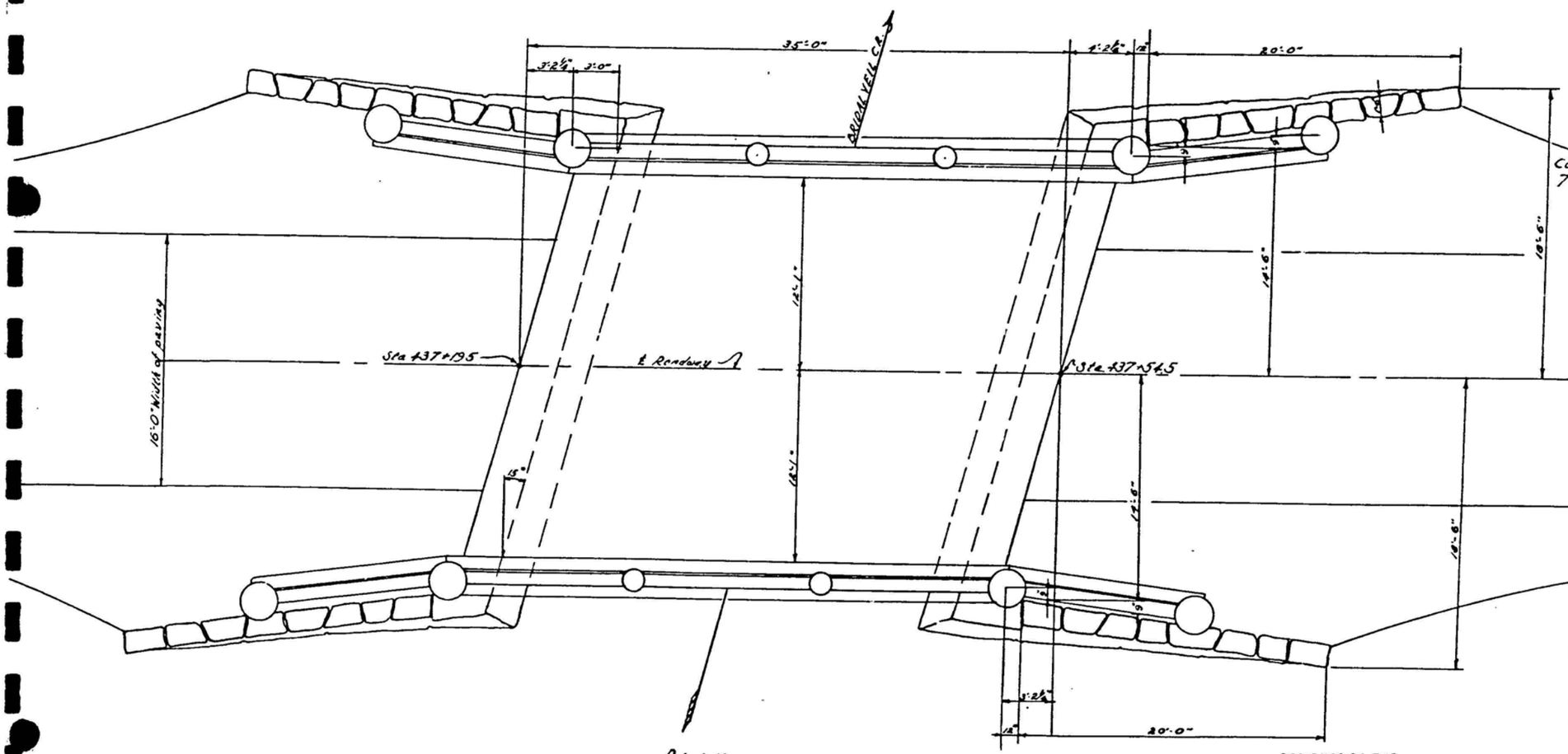
Once the contract was completed in mid-September the new Chinquapin-Bridalveil Creek section of the Glacier Point Road was opened to traffic. Almost immediately the BPR commenced oiling operations using day labor. By late October, when cold weather ended operations for the year,

17. United States Department of Agriculture, Bureau of Public Roads, District Two, "Final Construction Report, Base Course Surfacing, Chinquapin-Bridalveil Creek Section, Glacier Point Road, Yosemite Park Project, NR 5-A1, Base Course, Yosemite National Park, Mariposa County, California," by F.J. Hughes, Assistant Highway Engineer, February 3, 1936, pp. 1-20, and Superintendent's Monthly Narrative Reports, Yosemite National Park, November 1933, p. 10; June 1934, p. 8; and August 1934, p. 9; YNPRL.

SHT. NO.	PLAN	PROJECT NO.	PROJECT NO.
2	Yos. 5-A	Alt. A	6

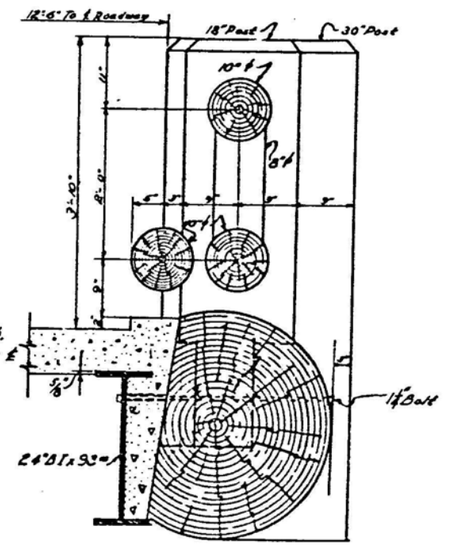


UPSTREAM ELEVATION
Scale ½" = 1'-0"



PLAN
Scale ⅛" = 1'-0"

DESIGNED BY THE
LANDSCAPE DIVISION
RECOMMENDED BY [signature] DATE 10/1/32
CHIEF LANDSCAPE ARCHITECT



SECTION THRU RAIL
Scale 1" = 1'-0"

HALF-SIZE REPRODUCTION

US DEPARTMENT OF INTERIOR - NATIONAL PARK SERVICE
ARCHITECTURAL PLANS
BRIDAL VEIL CREEK BRIDGE
STA 437+30 PROJECT 5-A
YOSEMITE NATIONAL PARK
OCTOBER 10-1932 SCALE AS SHOWN

ON MICROFILM

oiling was completed between Bridalveil Creek and a point about five miles west. Oil was spread and mixing partially completed on the remainder of the new roadway westward to Chinquapin. The oiling was completed during the summer of 1935.[18]

4. Construction of Bridalveil Creek Bridge: 1933

Following the 1930-31 roadway survey BPR engineers prepared plans, specifications, and estimates for the Bridalveil Creek bridge at their District Two office in San Francisco. The plans called for cement rubble masonry abutments, the west abutment resting on solid rock and the east abutment resting on disintegrated granite. The superstructure was designed to include five 24-inch, 93-pound I-beam stringers with lateral bracing provided at the ends by 12-inch, 36-pound I-beams and at the quarter points by 12-inch 20.7-pound channels. All connections were bolted. The deck was designed as a 7-inch concrete slab with a 1-1/2-inch crown at the center. Yellow pine logs, 36 inches in diameter and extending the full length of the bridge on each side, would be used as facing to cover the steel members and as support for the posts and hand rail, the latter items to be of lodgepole pine. The bridge was to have a 32-foot, 2-inch span, center to center of bearings, and a 24-foot-wide roadway. Approaches were designed on the basis of the 16-foot 1929 Forest Highway Standard.

Funds for the bridge construction were provided from regular park road construction appropriations ($900) and emergency appropriations ($8,000). Engineering expenses ($1,100) were paid from regular park road appropriations.

The project was advertised in December 1932, and the lowest of four bids submitted was that by Nelson and Wallace of Escalon, California. The bid was approved by the Secretary of the Interior on February 9, 1933, but because of weather conditions the contract time of 120 calendar days was not started until June 22.

As soon as a tent camp was established at Bridalveil Creek the contractor commenced getting logs for the bridge facing. A hand winch was set up, and the west abutment excavation begun. Solid rock was found two feet above the plan elevations at the west abutment, and the footing elevations were raised accordingly. Excavation on this abutment was completed on July 11

18. Superintendent's Monthly Narrative Reports, Yosemite National Park, September 1934, pp. 7-8, and October 1934, p. 9, YNPRL.

and placement of cement rubble masonry commenced immediately. Excavation of the east abutment started on July 11 and was carried to plan elevations.

Rock for the masonry abutments was first obtained from a quarry on the road slope east of the bridge. Later, a rock ledge containing better grained stone was found about one-fourth of a mile upstream from the bridge site.

During construction of the abutments the rocks were trucked to the bridge site and dumped in piles. The blocks were lifted with the hand winch, lowered into place, shaped, lifted again to permit mortar placement, and then lowered to their final location. Virtually all of the face stones were deep enough to be classified as headers.

By August 28 placement of the masonry, pouring of concrete bridge seats, and installation of the masonry plates for the bridge seats on both abutments were completed. Structural and reinforcing steel was trucked to the site in late August, the structural steel being swung into place by rollers and the hand winch. The main stringer logs were brought to the site for shaping and placement. Log stringers and end posts were bolted into place prior to pouring the concrete deck slab, thus eliminating the necessity of a header board and providing a tight joint between the concrete and logs.

Pouring of the concrete deck was completed on September 18. Sand was secured from a river bar in Yosemite Valley, and coarse aggregates were obtained from the Granite Construction Company at the Wawona Pit. Concrete was mixed in a two-sack mixer and transported to the bridge in wheelbarrows. Class D concrete, with 10 percent extra cement to compensate for the use of local sand, was used for the deck.

The log hand rail, which is no longer in place, was assembled and placed while the deck was curing. The hand rail was coated with Cabots #47 creosote stain and raw linseed oil, while the structural steel was given a field coat of red lead and a top coat of aluminum paint.

Excavation of the roadway approaches was carried out between September 1-20. This excavation was performed by a 1-1/2-cubic yard Northwest shovel.

The construction work on the bridge was completed on October 5, 1933, at which time 85 percent of the contract time had elapsed. All told, the contractor was paid $9,267.75 for the project. According to Superintendent Thomson the completed bridge was "excellent in appearance."[19]

5. Studies and Surveys to Determine New Route between Bridalveil Creek and Glacier Point: 1932-1933

During 1932-33 the Yosemite Advisory Board studied the problem of the most desirable road route between Bridalveil Creek and Glacier Point.[20] The board issued a "Report and Recommendations Regarding Glacier Point Road" during the summer of 1933. The report urged that "the road from Chinquapin to Bridal Veil Meadows be continued on high standards to Sentinel Saddle." A "secondary and frankly slow speed road from Sentinel Saddle via Washburn Point" should be built to the "proposed parking space near the Glacier Point Hotel." The route beyond the Sentinel Saddle "may or may not involve the use of parts or all of the present road."[21]

Thus, BPR engineers conducted two surveys during late 1933 to locate the new route. During September-November the section between Bridalveil Creek and Sentinel Saddle was surveyed and located (the design specifications were completed in February 1934), and in late September the section between Sentinel Saddle and Glacier Point was investigated.

The route between Bridalveil Creek and the Sentinel Dome Saddle, comprising 5.233 miles, would essentially follow the general line of the old road, intersecting it at many places. The alignment, grade, and width standards for this section were the same as those used for the construction of the Chinquapin-Bridalveil Creek section. It was not necessary, however, to use any curve with a radius of less than 400 feet on this part of the new road.

No walls or structures were required on this section of road except for 352 cubic yards of hand-laid rock embankment in the vicinity of the Clark Range Overview. Here the road was

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19. United States Department of Agriculture, Bureau of Public Roads, District No. Two, "Final Construction Report, Bridalveil Creek Bridge on Section A-1 of the Glacier Point Road, Yosemite Park Project E 5-A1, Bridge, Yosemite National Park, Mariposa County, California," by T.M. Roach, Assistant Highway Engineer, March 21, 1934, pp. 1-19, and Superintendent's Monthly Narrative Report, Yosemite National Park, July 1933, p. 9; August 1933, pp. 7-8; September 1933, p. 8; and October 1933, p. 9; YNPRL.

20. *Annual Report of the Director of the National Park Service, 1932,* pp. 62-63.

21. United States Department of Agriculture, Bureau of Public Roads, District No. 2, "Reconnaissance Report, Glacier Point Project, Yosemite National Park, California," by M.H. Potter, Chief of Roads Survey Party, October 13, 1933, pp. 1-2, YNPRL.

designed as a part-bench section buttressed by the wall. This section was a steep, rocky side hill, and fills were eliminated to avoid long unsightly slopes and damage to the terrain. Material for the wall was found in adjacent cuts.

Some 44 culverts were required on the Bridalveil Creek-Sentinel Dome Saddle section of road. Of these 31 were 18-inch corrugated metal pipe, 10 were 24-inch corrugated metal pipe, 2 were 36-inch corrugated metal pipe, and 1 was 12-inch perforated pipe. Masonry headwalls were to be used for culverts wherever there was a channel or gully leading in from the side. Concrete drop inlets were to be used where culverts were in cuts, thus preventing roadway damage. In flat country where both ends of the culvert pipes would be visible from the road, headwalls were to be placed on both the upslope and downslope sides of the pipes. Where the downslope end of the pipe was a considerable distance below the road shoulder, the lower headwall would be eliminated and the pipe extended some four feet.

Provisions were also made for flattening and rounding cut slopes, obliterating portions of existing roads, and protecting landscape features. Respecting labor and contract requirements, specifications were established to ensure compliance with codes of fair competition, selection of labor thorough the Reemployment Service, designation of minimum wage rates for various types of labor, and restriction of labor to 130 hours per month.[22]

During late September 1933 the 2.2-mile section of the Glacier Point Road was investigated by BPR engineers. The engineers reported that the existing road varied from 12-20 feet in width and had a "fair alignment and grade for 0.8 mile." Then the road passed "through six very sharp switchbacks" on grades up to 15 percent (some of which were curves of less than 20-foot radius) to the end of the parking area near the Glacier Point Hotel.

The recommended improvements included widening of the existing road to an overall width of 22 feet (including shoulders), smoothing the grade and placing a crushed rock base course overlay six inches deep with an oil treated surface two inches thick. The existing road would be used for 1.7 miles of the total distance. The changes for the old route would occur at "Mile 0.8" where the first switchback would be designed on a 100-foot radius curve, at "Mile 1.0" where a 50-foot radius curve would be used on the second switchback, and at "Mile 1.2" (Washburn Point) where a 200-foot radius curve would be used.

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22. U.S. Department of Agriculture, Bureau of Public Roads, "Location and Design Report, Bridalveil Creek-Sentinel Dome Saddle Section," March 10, 1933, pp. 1-22, YNPRL.

From "Mile 1.3," at the north end of the Washburn Point parking area, a new road would be constructed for 900 feet on an 8 percent grade to connect with the existing road at "Mile 1.5," a point about 400 feet south of the Glacier Point campground. This new construction would eliminate the most objectionable switchback on the existing road. The switchback and portion of existing road to be eliminated would be used as part of a proposed loop system promenade for pedestrians in the Glacier Point area.

From "Mile 1.5" to the Glacier Point Hotel parking area the existing road would be used. Thus, the 2.2-mile section would have a maximum 10 percent grade with minimum 50-foot radius curves, allowing "a safe speed of 15 miles per hour except when the road is slippery."

At Washburn Point a parking area, 200 feet long and 60 feet wide, was to be built "to fit the natural platform which lies alongside the present road." Log guard rails would define the limits of the parking area, and pedestrian footpaths would be laid outside the rails.

A 200-car parking area was proposed at Glacier Point. This project would be accomplished by extending the existing parking area in a westerly direction, cutting away a small knoll where a barn stood, and filling in the ravine west of the barn. The parking area surface would be warped "to meet the contour of the country thus reducing scar, blending the structure into the landscape and reducing cost."

The improvement of this 2.2-mile section utilized, according to the BPR engineers, "all of the present road possible, thus reducing scars and devastation to a minimum" The engineers noted further:

> Symmetry and uniformity of alignment and grade systems are paramount safety factors for highway traffic. The summit at Sentinel Saddle is a natural transition point for change of high speed road to a secondary, slow speed road. The first 0.5 mile of the present road is an ideal natural transitional system of alignment and grade. It will force a gradual slowing of traffic to a speed that will negotiate the switchbacks.
>
> Caution signs should be posted at Sentinel Saddle.
>
> In the event that future traffic increases to the extent that this road is inadequate it can be retained as one unit of a one way road system. Should a high

type two lane road be demanded, this road will still have value to serve as a stub road to Sentinel Dome.[23]

6. Construction of Bridalveil Creek-Glacier Point Section: 1933-1935

Funds for constructing the Sentinel Dome Saddle-Glacier Point section of road were made available under National Industrial Recovery Act appropriations on September 9, 1933. The project, which was approved for construction in October 1933, was conducted under the immediate direction of Park Service foremen in 1933 and T.M. Roach, BPR Assistant Highway Engineer, in 1934-35. Day labor forces under NPS direction were employed, and a camp was established near the Glacier Point Hotel. No design specifications or engineering party were assigned to this section of the new road construction.

Work continued until December 13, clearing and excavating the improved roadway westward from Glacier Point. The only equipment available for the work was a two-hammer compressor, two 2-ton dump trucks, and a 20-horsepower tractor with stoneboat.

After a light winter work was resumed on April 19, 1934, under the direction of BPR engineers. Day laborers were put to work immediately on splitting and piling logs left from previous clearing operations and drilling rock cuts along the line change in the switchback area. Roadway clearing to the Sentinel Dome Saddle was completed in June, and excavation work was started on the lower end of the line change, about 0.7 mile west of Glacier Point, and carried on upgrade toward Sentinel Dome. The excavation work was double-shifted after June 25, because the rocky strata kept production low. Much of the coarse material, too large to place in small fills, was hauled to the parking areas where larger fills were encountered.

Excavation of the main roadway section was completed on August 15 and that for the parking areas on October 1. Drainage structures were installed as the work progressed. Some 2,600 feet of guard rails, consisting of peeled logs from 10-16 inches in diameter, were placed around the sharpest curves and the parking areas. Setting of the guard rail, cleanup work, obliteration of the old road, finishing, and ditching were completed on October 23, 1934.

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23. U.S. Department of Agriculture, Bureau of Public Roads, "Reconnaissance Report, Glacier Point Project," October 13, 1933, pp. 2-13, YNPRL.

When work resumed in the spring of 1935 it was apparent that additional culverts and drains were required in sections where there had been little previous indication of water. It was evident that subgrade reinforcement was required in the section adjacent to Sentinel Dome.

Work resumed on June 17, 1935. A section of the road immediately below the Sentinel Dome Saddle was excavated for some 150 feet and backfilled with two feet of rock, as the material at this point had proven unsatisfactory when wet. Culverts and drains were installed where required, and red reflector buttons installed on the guard rail at sharp curves. All told, 62 linear feet of 24-inch, 552 linear feet of 18-inch, and 122 feet of 12-inch corrugated metal pipe were used for the culverts, and dry rubble headwalls were placed on all pipe culverts. A total of 1,388 linear feet of 6-inch porous tile drain and 270 linear feet of French drains were installed.

As finally constructed and completed during the summer of 1935 the main road between the Sentinel Dome Saddle and Glacier Point had an average width of 18 feet for two miles. The section leading to the Glacier Point Hotel and the exit road from the parking area had 14-foot widths, both being one-way roads. The parking area at Washburn Point was 200 feet long and 36 feet wide, but since trees were left in the area to enhance its beauty, only 36 parking spaces were available. Three parking areas, 125 by 60 feet, 168 by 60 feet, and 200 by 60 feet, were constructed adjacent to the Glacier Point Hotel, the three sections providing some 140 parking spaces. At the completion of the project, the BPR reported that this "section of the Glacier Point road is far below the standard of the adjacent sections, but may be adequate for several years."[24]

While the day labor project east of the Sentinel Dome Saddle was underway, the BPR developed plans and specifications for the 5.233-mile section between Bridalveil Creek and Sentinel Dome during the winter of 1933-34. The same standard was followed in the design of this section as that between Chinquapin and Bridalveil Creek. The shoulder-to-shoulder width was 22 feet with a minimum radius of curvature of 400 feet and a compensated 6 percent maximum grade. With the exception of some hand-laid embankment there were no major structures planned for this project. Drainage would be taken care of by corrugated metal pipe culverts, masonry headwalls to be constructed on the inlet ends of all culverts but on the outlet ends only if the end of the culvert could be seen from the roadway.

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24. United States Department of Agriculture, Bureau of Public Roads, District No. Two, "Final Construction Report on the Day Labor Construction, Section A3, Route 5, Glacier Point Road, Yosemite National Park, Mariposa County, California," by T.M. Roach, Assistant Highway Engineer, May 13, 1936, pp. 1-19, and Superintendent's Monthly Narrative Reports, Yosemite National Park, November 1933, p. 10; August 1934, p. 10; September 1934, p. 8; October 1934, p. 9; June 1935, p. 9; July 1935, p. 8; and August 1935, p. 9; YNPRL.

As part of the contract to be let for the work, a crushed rock base course would be placed on the roadway from Bridalveil Creek to Glacier Point. The crushed rock was to be obtained from a pit some 600 feet to the east of the road between Grouse Creek and Badger Pass. Crushed rock was to be stockpiled for future use in the bituminous surface treatment of the entire new road.

The specifications contained provisions for flattening and rounding cut slopes, obliterating existing roads, and protecting landscape features. Other provisions included compliance with codes of fair competition, selection of labor through the Reemployment Service, designation of minimum wage rates for various types of labor, and restriction of labor to 130 hours per month.

Funds for the construction project were made available under National Industrial Recovery Act appropriations on September 9, 1933. The project was advertised in April 1934, and on May 25 the Secretary of the Interior formally accepted the lowest of the two proposals submitted. The contract was thus awarded to the Granite Construction Company, and the contract time of 275 days was started on June 1, 1934.

Working from a camp on Grouse Creek, the contractor started clearing operations above Bridalveil Creek. Two tractors with Ateco scrapers began grading three weeks later, and a 2-cubic-yard power shovel was soon placed in operation.

After the first 1.6 miles of the Bridalveil Creek-Sentinel Dome Saddle section were graded, operations were shifted to the north end of the section "where the work could be carried on with a minimum of inconvenience to traffic during the height of the tourist season." With the exception of parts of the 1.6-mile section, excavation was conducted in "rock or boulders mixed with disintegrated granite," making it "impracticable to use scrapers except for cleaning up and finishing behind the shovel." Working back from the north end the shovel completed 2.2 miles of grade before winter weather terminated operations on November 3.

Work was resumed on June 12, 1935, concentrating on 1.4 miles "of steep rocky sidehill." The shovel worked steadily from then until the last grading was completed on September 17. The grading was "exceedingly difficult" because of "the roughness and steepness of the terrain, the large amount of rock encountered, and the necessity of protecting and passing traffic over the old road which lies below the new highway along this portion" [of the Bridalveil Creek-Sentinel Dome Saddle] of the road. Controls were commenced during construction of this section permitting "traffic to pass at hourly intervals, when all equipment was stopped, thus successfully and safely solving

a difficult situation, though at a considerable cost to the contractor because of lost equipment time and expense for flagmen."

Drilling and blasting for excavation was both extensive and expensive. Much of the excavation was solid rock or boulders, requiring up to four blasting operations before the rock was reduced "so that it could be handled by the shovel and placed in layers not exceeding 24 inches."

Water for fill compaction, burning protection, and base course mixing operations was distributed through a 3-1/2-inch pipeline laid from Bridalveil Creek. When that source dried up in 1934 a siphon was placed at Ostrander Lake, the source of Bridalveil Creek, to raise the water over the rim of the lake into the creek channel as the water level of the lake had fallen below the elevation of the outlet. In 1935 the flow of several springs and small streams was used, four pumps being used "to pick up the water."

Rock for surfacing was obtained from the same granite quarry between Grouse Creek and Badger Pass that had been opened and used by the contractor in surfacing the Chinquapin-Bridalveil Creek section of the road. Between September 12 and October 16, 1934, the base course was placed on the first 1.6 miles above Bridalveil Creek and one 3-1/2-inch layer on the 2.2-mile section from the Sentinel Dome Saddle to Glacier Point. Upon resumption of work in 1935 the second layer was placed on the latter section. Since the remainder of the Bridalveil Creek-Sentinel Dome Saddle section was not ready for surfacing, the plant screens were changed and "11,000 tons of coarse aggregate and screenings were produced and stockpiled for future use, under a separate contract, for the placing of an armor coat on all of Route 5." When this work was completed, the base course material required for completing the surfacing of the Bridalveil Creek-Sentinel Dome Saddle section was produced and placed in a temporary stockpile at Mono Summit until the grading was completed on the remaining 3.6-mile section of road. The entire project was completed and ready for acceptance on October 10, 1935.

Prior to June 17 of that year skilled and unskilled labor was not permitted to work more than 130 hours in any one calendar month. On that date a change order was approved, permitting labor "to work not exceeding 40 hours per week, thus conforming with the hours permitted on other projects in the Park." The total number of men employed on the project varied between 100 and 234, the average being about 167. Operations were carried on by shifts working 5-8 hours each, the number of shifts worked per day varying from 1 to 3.

At the request of the Park Service "a parking area 300 feet long was constructed by widening the roadway 9 feet" in the vicinity of the Clark Range Overview. This parking area resulted in "an increase of 527 cubic yards in handlaid rock embankment."

During construction of the Bridalveil Creek-Sentinel Dome Saddle section it was necessary to place some 603 lineal feet of 6-inch tile drain "to care for springs encountered in excavating cuts." A second 36-inch culvert was placed at the East Fork of Bridalveil Creek in 1935 when the spring runoff "indicated the first culvert placed at that location was insufficient to carry an extremely heavy runoff."

Where the roadway crossed meadows "the sod within the roadway area was stripped before the fills were constructed and later placed as a covering on the slopes." On rock fills where such sod was not available for cover, as was the case for most of the project, selected material from cuts, or borrow, was used to cover the rock slopes. According to the BPR, this procedure left "a neat appearing slope" and undoubtedly did much "to eliminate landscape scar by giving vegetation an opportunity to grow."

The contract was formally accepted on October 15, 1935. All told, the contractor was paid $248,331.06.[25] (Typical cross section drawings for the contract may be seen on the following pages.)

Once the road was completed day labor forces using Park Service equipment began bituminous treatment of the road between Bridalveil Creek and Glacier Point. This project was completed during the 1935 and 1936 seasons.[26]

7. The Completed Road: 1935

Once the new bituminous surfaced Glacier Point Road was completed in October 1935 it was noted that the point was now only one hour's drive from Yosemite Valley. NPS management anticipated "that an overwhelming majority of all automobiles entering the Park"

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25. United States Department of Agriculture, Bureau of Public Roads, District No. 2, "Final Construction Report on the Grading of Section A-2 and Placing Base Course on Sections A-2 & A-3 of the Glacier Point Road, Yosemite National Park Project NR 5-A2, A3, Grading & Base Course, Yosemite National Park, Mariposa County, California, by F.J. Hughes, Assistant Highway Engineer, September 17, 1936, pp. 1-30, and Superintendent's Monthly Narrative Reports, Yosemite National Park, October 1934, p. 9; June 1935, p. 9; July 1935, pp. 5, 8; August 1935, pp. 9-10; September 1935, pp. 6, 8; and October 1935, p. 6; YNPRL.

26. United States Department of Agriculture, Bureau of Public Roads, "Final Construction Report on the Grading of Section A-2 and Placing Base Course on Sections A-2 & A-3 of the Glacier Point Road," September 17, 1936, pp. 3-4, YNPRL.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DISTRICT TWO

TYPICAL CROSS SECTION

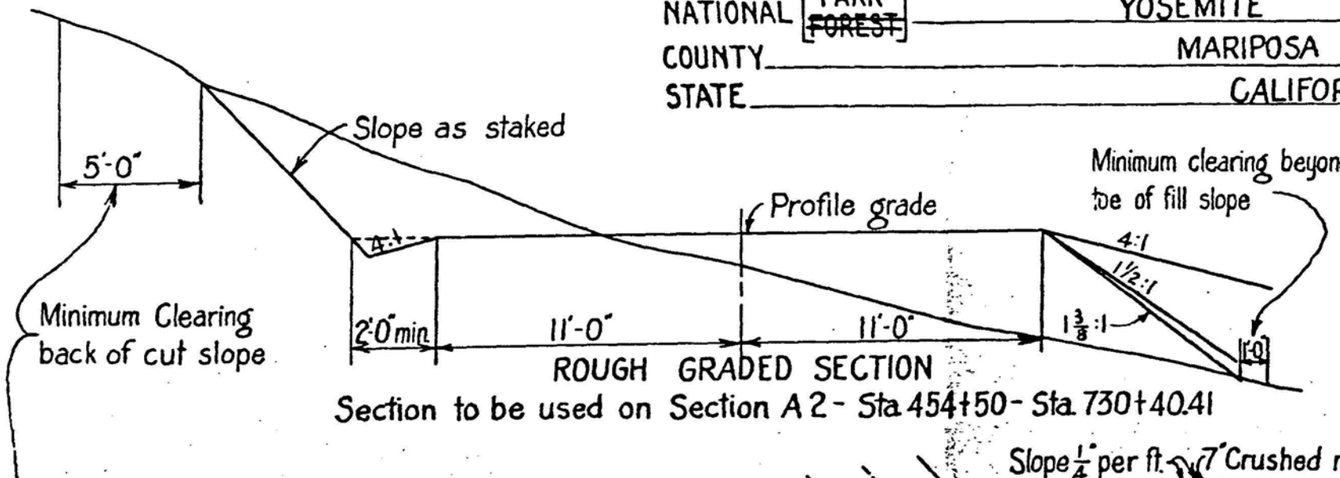
FOR A2 - Grading and Base Course (Sta 454+50 - Sta. 730+40.41)

PROJECT NO. 5 - A3 Base Course (Mile 0 - Mile 2.2)

NATIONAL ~~PARK~~ ~~FOREST~~ YOSEMITE

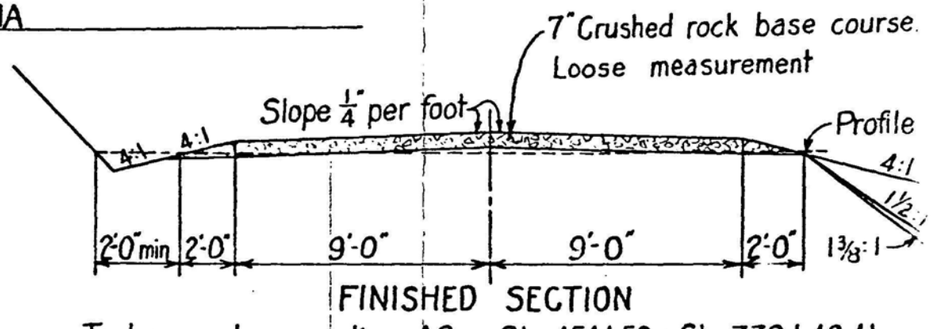
COUNTY MARIPOSA

STATE CALIFORNIA



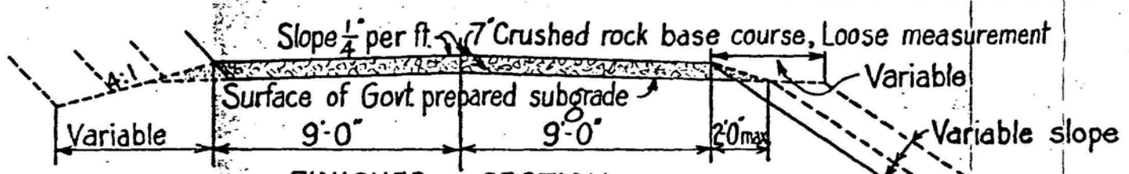
ROUGH GRADED SECTION

Section to be used on Section A 2 - Sta 454+50 - Sta. 730+40.41



FINISHED SECTION

To be used on section A2 Sta. 454+50 - Sta. 730+40.41



FINISHED SECTION

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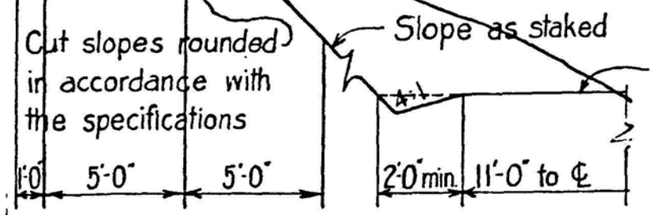
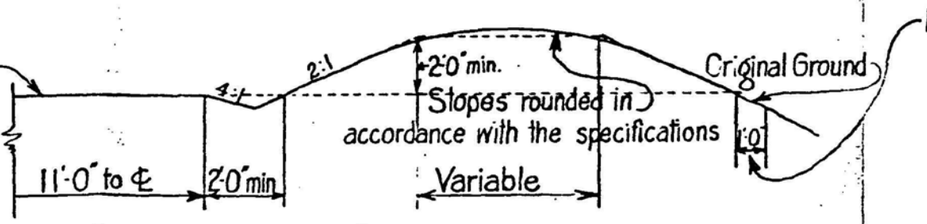
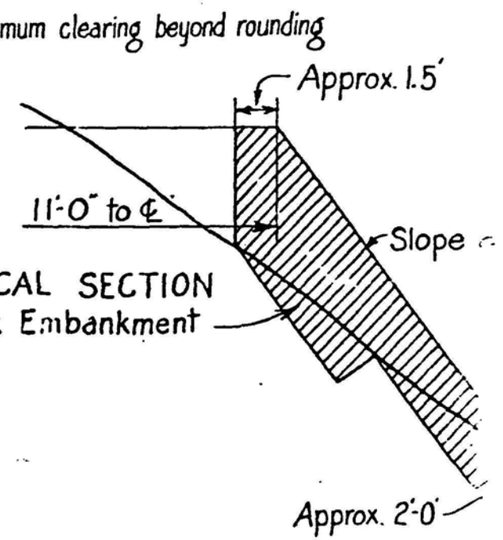




SPECIAL TYPICAL SECTION FOR SECTION A2
Showing rounding



SPECIAL TYPICAL SECTION
Showing H.L. Rock Embankment

All curves are to be widened and superelevated as per instructions.
Where drainage conditions require larger side ditches the necessary widening shall be done.

Maximum Superelevation = 0.128' per foot width of roadway.

would "make the side trip over the route." During the summer of 1935, despite detours and controls necessitated by construction, "as many as five hundred cars per day passed over the route to the Point."[27]

Superintendent Thomson was pleased with the new Glacier Point Road. In a letter to NPS Director Arno B. Cammerer on October 15, 1935, he observed:

> It is difficult to realize that the much-talked-of Glacier Point Road is now an actuality. You will recall the long studies and discussions of the feasibility of any modern road, the substitution of a tramway for the road, the loop road proposal, and the proposals to stop at Sentinel Saddle or at Washburn Point. This Glacier Point subject was precipitated practically upon my arrival here nearly 7 years ago, and into the picture we drew Mr. Albright, all of the Advisory Board, Dr. Hewes, Mr. Tolen, Mr. Roach, Dr. Matthes, Dr. Tresidder, Mr. Woskey, and at least a score of others with lesser interests. Riding over it today, I could not but recall the dozens of meetings, discussions, and the endless miles some of us have hiked in search of solutions. . . . So far as Yosemite is concerned, it easily marks the highest standard yet attained in road construction through difficult country.[28]

By 1937 NPS pamphlets were advertising the ease with which Glacier Point could be reached. Among other highlights the pamphlets noted:

> Glacier Point, above the Valley rim, commands a magnificent view of the High Sierra. Spread before one in panorama are the domes, the pinnacles, the waterfalls, and dominating all, Half Dome, a mythical Indian turned to stone. . . .
>
> No visitor should leave Yosemite without seeing Glacier Point. It is the climax of all Yosemite views. It is reached by an excellent paved road which leaves the Valley just west of Bridalveil Fall, and then through the 4,233-foot tunnel to Chinquapin, from which point a good paved road leads through forests of fir and lodgepole pine to Glacier Point. The total distance is 30 miles, or about 1-1/4 hours' drive each way. The firefall is a nightly feature in summer and takes on an entirely different aspect from the top of the cliff. A short drive of a half mile from the main road above Glacier Point brings one to Sentinel Dome, 8,117 feet in elevation, where an unobstructed panorama of the southern half of the park may be had, from the coast range on the west to the snow-capped ridge of the Sierra on the east. A hotel, cafeteria, and Government campground are available at Glacier Point.[29]

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27. *Ibid.*, p. 2, YNPRL.

28. Thomson to Director, National Park Service, October 15, 1935, File No. 631-10, Glacier Point Road, 1934 to 1950, YNPRL.

29. U.S. Department of the Interior, National Park Service, *Yosemite [California] National Park* (Washington, U.S. Government Printing Office, 1937), pp. 5, 7, and Superintendent's Monthly Narrative Reports, Yosemite National Park, June 1935, p. 9; April 1936, p. 8; May 1936, pp. 6, 8; September 1936, p. 9; October 1936, p. 7; November 1937, n.p.; and October 1938, p. 4; YNPRL.

D. Maintenance and Operation of Glacier Point Road: 1935-1980s

1. Post Construction Work on Road: 1935-1939

Between 1935 and 1939 the BPR conducted post construction work on the new Glacier Point Road, using funds provided primarily through the National Recovery Administration and regular park appropriations. All labor for the post construction work was employed through the NPS and supervised by BPR engineers. The principal projects in this post construction work, which cost some $26,000, included slide removal, surface repair and reinforcement, and installation of subdrains. Minor items included removal of downed trees, installation of inlet and diversion ditches, and cutting drains through the snow banks to culvert inlets during spring runoff.

One major slide along the road was located at Station 127 some distance above the El Portal Overview vicinity. During the first two winters the slide caused considerable trouble, blocking the road with mud flows and necessitating construction of a passing track on the low outside cut bank. Several thousand cubic feet of material were removed from the slide area during the two winters. Other slide areas that required attention were sections just below the El Portal Overview and a point some distance above the Clark Range Overview.

Subgrade material on the Glacier Point Road primarily consisted of disintegrated granite that slipped badly when saturated, forming rolls in the bituminous surfacing. Damage from rolling of the surface usually occurred in fairly long sections, because such sections were topped from the same portion of the cut. Accordingly, the BPR removed the base course layer through such sections, added three inches of imported reinforcing material consisting of stockpiled base course or crushed rock, and replaced the base course material. Reinforcing work was performed on some 9,400 linear feet of the road, all sections being increased 3 inches except for the roadway just east of Bridalveil Creek which received 6 inches of base course material.

Removal of bituminous surfacing, preparatory to reinforcing the subgrade, necessitated the remixing of material after the reinforcement work was completed. It was also necessary to remix sections where drains were installed after surface failure.

Virtually all subdrains installed were 12-inch perforated pipe, although 6-inch tile was used in a few locations. No drain covers were used between Chinquapin and Bridalveil Creek, but redwood covers were installed between Bridalveil Creek and the Sentinel Dome Saddle. Drains were installed where springs were encountered along the entire length of road.

All drains installed without a protecting cover had to be removed within two years. Upon removal BPR engineers found that rock backfill had silted up from filtration of fine granite soil from the gutters above the drains. Replacement of the drain with clean backfill and mortaring of the top of the backfill with lean Portland cement grout "gave a satisfactory installation in every case." Some 2,050 linear feet of drain were removed, cleaned, and replaced with mortar seal during the post construction work. In addition, some 2,450 linear feet of 6-inch tile drain and 2,900 linear feet of French drain were installed in the gutter lines.[30]

2. Development of Badger Pass Ski Area: 1935-1936

Completion of the Glacier Point Road in 1935 created a new modern access route into the snow belt at Yosemite. Donald Tresidder, president of the Yosemite Park and Curry Company, lost little time in pushing for development of a new ski area east of Chinquapin where skiers had been concentrating in recent years. The area known as Monroe Meadows, on the original Glacier Point Road, was selected in 1935 as the site for a new downhill ski facility. Soon thereafter, a ski chalet, lifts, parking areas, and an entrance road at Grouse Creek were constructed and ski slopes were cleared for the new facility which came to be known as Badger Pass. The buildings of the recreational area were the responsibility of the park concessioner, but the construction and maintenance of the entrance road and parking lots, completed in 1935-36, fell to the Park Service. Thus, the portion of the new Glacier Point Road between Chinquapin and the Badger Pass entrance road was kept open by NPS snow removal and maintenance crews each winter.[31] Depending on the amount of snowfall the road was sometimes kept open to the grade one mile beyond the entrance road to accommodate the large number of skiers. During the late 1930s Park Service maintenance crews were aided in keeping the Glacier Point Road open to Badger Pass by Civilian Conservation Corps (CCC) enrollees and BPR details, both of whom removed fallen rocks and trees and cleaned ditches.[32]

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30. United States Department of Agriculture, Bureau of Public Roads, District No. 2, "Final Construction Report, Post Construction Work, Route 5, Wawona Road-Glacier Point, Yosemite National Park, Mariposa County, California," by T.M. Roach, Assocaite Highway Engineer, April 8, 1939, pp. 1-12, YNPRL.

31. *Historic Resource Study, Yosemite,* II, 901-02; U.S. Department of Agriculture, Bureau of Public Roads, "Final Construction Report, Post Construction Work, Route 5, Wawona Road-Glacier Point," April 8, 1939, p. 2; Pavlik, "In Harmony With the Landscape," pp. 119-20; and Superintendent's Monthly Narrative Reports, Yosemite National Park, March 1935, p. 6; October 1935, p. 6; November 1935, p. 5; September 1936, p. 7; February 1937, pp. 4-5; and March 1937, p. 5; YNPRL.

32. Superintendent's Monthly Narrative Report, Yosemite National Park, March 1939, p. 5, YNPRL.

3. Bituminous Surfacing Treatment of Glacier Point Road: 1939-1940

During 1939-40 the entire length of the Glacier Point Road was given a new bituminous surface treatment. The work was carried out under contract and BPR (which became the Public Roads Administration in 1940) supervision. The bituminous treatment on the roadway from Chinquapin to the Sentinel Dome Saddle was 20 feet in width, the compacted surfacing being 18 feet in width with a base thickness of 0-6 inches and a top thickness of 2 inches. The roadway from the saddle to Glacier Point received a base course and bituminous armor coat 18 feet in width, a base thickness of 2 inches, and a top thickness of 1 inch. The work was completed in late August 1940 at a cost of $153,251.03.[33]

4. Relinquishment of Glacier Point Road to Park: 1940

Maintenance of the Wawona and Glacier Point roads was formally relinquished to the Park Service on October 16, 1940. These roads had been under construction or post-construction by the Bureau of Public Roads, and its successor the Public Roads Administration, since 1928.[34]

5. Improvements to Glacier Point Road Corridor During Mission 66: 1957-1961

Between 1940 and the late 1950s little improvement was made to the Glacier Point Road corridor. However, with Mission 66 funding efforts were made to improve the road and upgrade parking facilities along its route.

In 1957 initial efforts were made to expand the Glacier Point parking area. The parking lot was graded and new subsurface drains were installed.

The following year a contract was let to the Fresno Paving Company for enlarging and surfacing three parking areas at Glacier Point, Washburn Point, and the Badger Pass ski development. The $109,327 contract provided for placement of bituminous pavement, curbs, gutters,

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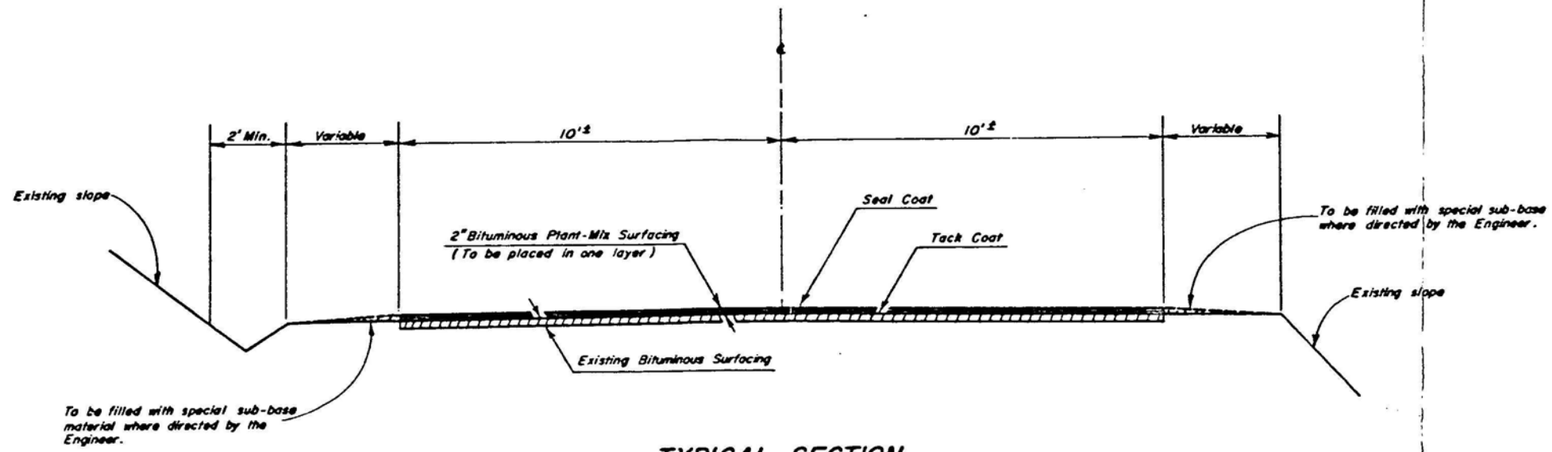
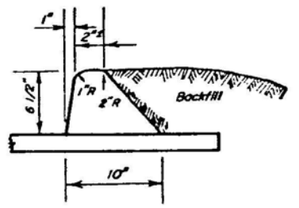
33. United States Department of the Interior, National Park Service, Plans for Proposed Project 5-A1, A2, A3, Bituminous Treated Surfacing, Route No. 5-Wawona Roads-Glacier Road, Yosemite National Park Highway System, California, "Park Road Construction Record," July 1, 1968, Denver Service Center, Technical Information Center (hereinafter DSC-TIC), and Superintendent's Monthly Narrative Reports, Yosemite National Park, August 1939, p. 5; June 1940, p. 5; July 1940, p. 4; August 1940, p. 4; and September 1940, pp. 5-6; YNPRL.

34. Superintendent's Monthly Narrative Report, Yosemite National Park, October 1940, p. 4, YNPRL.



TYPICAL SECTION



BACKFILL SECTION

DIKE SECTION DETAILS

(Plant-Mix machine laid bituminous dike)

Scale 1 1/2" = 1'-0"

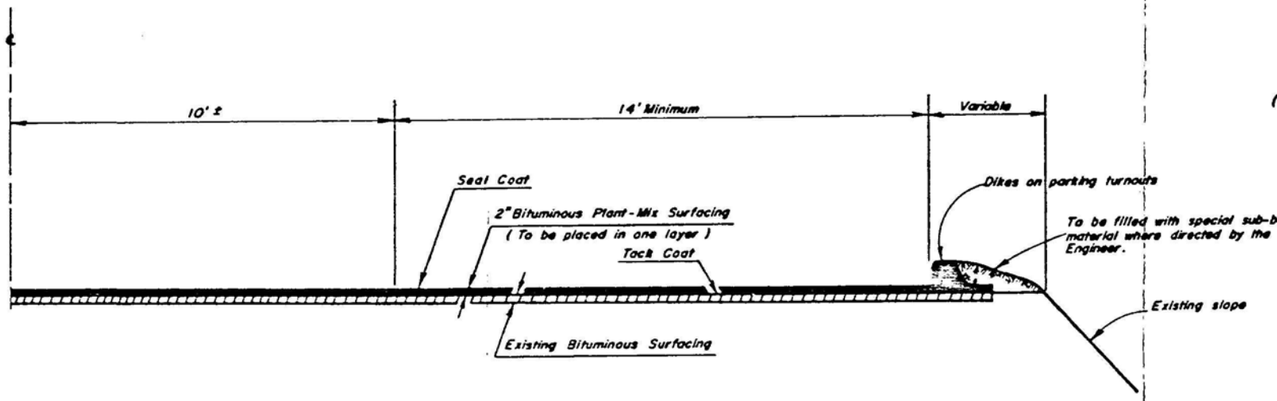
BITUMINOUS PLANT-MIX SURFACING

SEAL COAT: Emulsified asphalt seal coat, type 1, full width of surfacing main roadway and parking areas except East Portal Wawona Tunnel parking areas. (Section 313) Bituminous seal coat, type 3, on East Portal Wawona Tunnel parking areas. (Section 313)

SURFACING: 2" Bituminous plant-mix surfacing placed in one layer over existing surface main roadway and parking turnouts as directed. (Section 317) (No surfacing on East Portal Wawona Tunnel parking areas).

TACK COAT: Emulsified asphalt tack coat, full width of existing surfacing to be resurfaced. (Section 311)

Note: Road connections and parking turnouts to be surfaced the same as main road or as directed by the Engineer. Minor variations in the thickness of the plant-mix surfacing will be permitted, to accommodate irregularities in the existing surfacing. A grader laid plant-mix leveling course shall be placed where needed, as directed by the Engineer.



TYPICAL HALF SECTION
FOR ROADWAY AND PARKING TURNOUT

Superelevation and widening as directed by the Engineer.

REDUCED-PRINT SCALES REDUCED ACCORDINGLY

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS — SAN FRANCISCO, CALIFORNIA

TYPICAL CROSS SECTIONS

PROJECT YOSEMITE N.P.H. I-88, 2-A22, 5-A7
BITUMINOUS PLANT-MIX SURFACING

SECTION	STATION	TO STATION
I-88	54+86.32	130+00
2-A22	0+00	86+93
5-A7	0+63.54	263+00

SCALE: 1/2" = 1'-0"

DATE: July 6, 1960

and sidewalks at the Glacier Point parking area, thus increasing its capacity from 100 to 248 automobiles. The road circulation system at Glacier Point was also improved, eliminating a bottleneck that had "long vexed park visitors." The parking capacity at Washburn Point was tripled from 20 to 60 automobiles, and that at Badger Pass from 300 to 600. Access and exit roads at the ski area were redesigned to improve the traffic flow. The work commenced in June and was completed in October 1958.[35]

That same year the Bridalveil Creek Campground was enlarged and improved. The access road from the Glacier Point Road to the campground was upgraded and the latter widened where the two intersected. A base course was laid on the new access road, and bituminous surfacing was completed in 1960.[36]

During September-October 1960 the Glacier Point Road between Chinquapin and the Badger Pass access road was resurfaced. The work was contracted to the Harms Bros. Construction Company, the contract also providing for resurfacing of the El Capitan Bridge and tunnel on the Wawona Road. Hot plant mix for the project was hauled from the Mariposa Sand and Gravel plant at El Portal. The work included a 2-inch thick surfacing treatment over a roadway width of 22 feet. Park Service crews prepared the turnouts and parking areas along the Glacier Point Road for paving. The center line striping was begun in November 1960 and completed during the summer of 1961.[37]

6. Improvements to Glacier Point Road: 1980s

Portions of Glacier Point Road have been improved during the 1980s. In 1980 the NPS resurfaced the road from the Badger Pass ski area entrance to a point 1.3 miles to the east. The following year the NPS resurfaced 1.7 miles of roadway, extending from the Taft Point/Sentinel Dome parking/turnout to the Glacier Point parking area. During this project the switchback portion of the road was improved by widening curves, removing rock outcroppings near the roadside, providing asphalt shoulders, and installing a new culvert near the ranger residence. In

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35. Department of the Interior, National Park Service, Yosemite National Park, California, Press Memorandum, June 20, 1958, D30, Parking Areas, 1957-1959, WODC-Weekly Field Reports, July 2, August 1, September 3, and October 3, 1958, D2623, Reports-General, 1957-1959; and Superintendent's Monthly Narrative Reports, Yosemite National Park, June 1958, p. 7; July 1958, p. 6; August 1958, p. 9; and October 1958, p. 7; YNPRL.

36. Supervising Civil Engineer, WODC to Superintendent, Yosemite, August 11, 1958, D30, Construction and Maintenance, Roads-1958, and Superintendent's Monthly Narrative Reports, Yosemite National Park, August 1960, pp. 6, 8, and September 1960, p. 9, YNPRL.

37. Superintendent's Monthly Narrative Reports, Yosemite National Park, July 1960, p. 7; August 1960, pp. 6, 8; September 1960, pp. 6, 9; October 1960, pp. 6, 8; and December 1960, p. 6; YNPRL.

1982-83 the Federal Highway Administration rehabilitated and resurfaced a 2.5-mile portion of the road between the approximate mileages of 6.3 and 8.8, the latter point approximately 0.5 mile east of Bridalveil Creek bridge. During 1987-88 a major effort was undertaken to rehabilitate the destination parking and overlook at Glacier Point. Among other items the project included grading to construct new parking lot entrance and exit roads, grading for a new paved walkway featuring cutstone rock work, removal of existing entrance and exit curves and a portion of the lower parking tier, and soil scarification beneath the removed pavement.[38]

The Federal Highway Administration performed two inspections of the Bridalveil Creek Bridge in 1981 and 1984. During the latter inspection that bureau estimated that the bridge had a remaining life of 20 years. Since 1981 various repairs had been conducted on the structure, including a new wearing surface, new fascia log, and a new downstream side log barrier curb.[39]

In May 1989 the National Park Service prepared a report entitled "Road System Evaluation, Parkwide Road Engineering Study, Yosemite National Park, California." Road segment reconnaissance reports containing data on existing conditions and improvement alternatives and standards for the Glacier Point Road may be found on pages 65-80 of that study.[40]

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38. "Park Road Construction Record, July 1, 1968," Yosemite, DSC-TIC; Memorandum, Field Exploration Supervisor, Federal Highway Administration to Joseph H. Clem, Materials Engineer, Denver, Colorado, November 26, 1984, Denver Service Center, Western Team, Branch of Planning, Project Files; Interviews with Terry Gess, Chief, Maintenance and Engineering, and Ralph Parker, Engineering Operations Equipment Foreman, Yosemite National Park, August 29, 1989; and Acting Chief, Western Archeological and Conservation Center to Superintendent, Yosemite Naitonal Park, May 14, 1987, Denver Service Center, Western Team, Branch of Planning, Compliance Files.

39. U.S. Department of Transportation, Federal Highway Administration, Central Direct Federal Division, Office of Western Bridge Design, Denver, Colorado, "Bridge Safety Inspection Report, Bridge Over Bridal Veil Creek, Yosemite N.P., Structure NO. 8800-017P," July 10, 1981, and Supplemental Report, May 31, 1984, DSC-TIC.

40. U.S. Department of the Interior, National Park Service, *Road System Evlauation, Parkwide Road Engineering Study,* May 1989.

II. Photographs of Existing Conditions

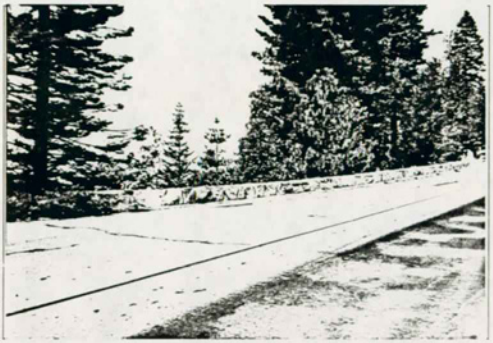
Mileage for the 15.8-mile Glacier Point Road is measured from its intersection with the South Entrance (Wawona) Road at Chinquapin to Glacier Point.

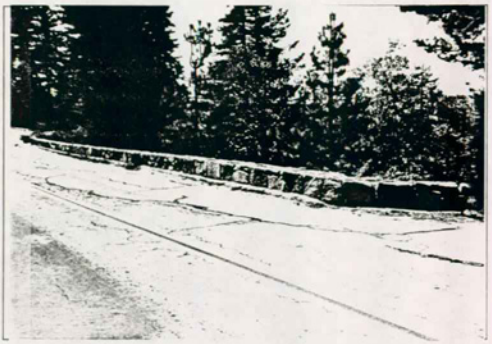
A. Stone Walls

1. Wall No. 1 (Mileage – 1.85) El Portal View Vicinity

Description – Wall No. 1 is a cutstone/mortar rock wall along the downslope side of the road. It is approximately 130-40 feet in length and stands about 1-1/2 feet in height above the road surface. Along the roadway cutstone approximately 3-6 inches in height forms a foundation for the parapet. The downslope side of the wall (away from the road) is about 3-4 feet in vertical height, supported by a sloping stone wall averaging 10-25 feet in height in the gully.

Condition – The wall is in generally good condition. The masonry in the top of the parapet is cracked in places, and several cut stones are cracked or chipped. The downhill end of the wall has loose and partially dislodged stones. The middle portion of the parapet wall shows a slight downslope declination.



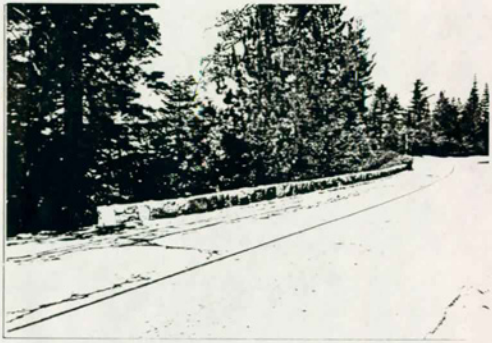


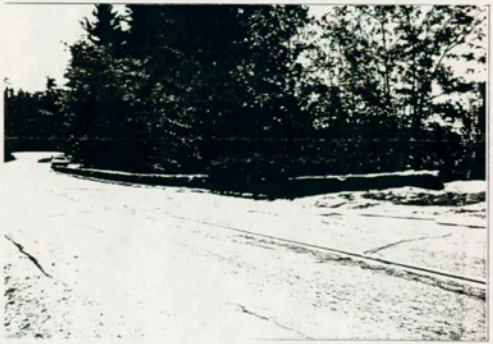
2. **Wall No. 2 (Mileage – 1.90)**

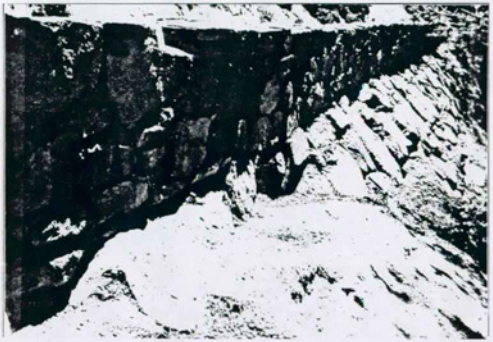
[Walls Nos. 1 and 2 are separated by a small paved turnout approximately 200 feet in length]

Description – Wall No. 2 is a cutstone/mortar rock wall along the downslope side of the road, virtually identical in construction and appearance to Wall No. 1. The wall is approximately 140-50 feet in length, and its parapet stands about 1-1/2 feet in height above the road surface. Along the roadway cut stone approximately 3-6 inches in height forms a foundation for the parapet. The downslope side of the wall (away from the road) is about 3-4 feet in vertical height supported by a sloping stone wall averaging 6-15 feet in height in the gully.

Condition – The wall is in generally good condition. Several stones in the top of the parapet are missing or chipped, and there are cracks in the masonry. Several stones are missing in the sloping support wall in the gully. The wall shows evidence of patching, and its middle portion shows a slight downslope declination.





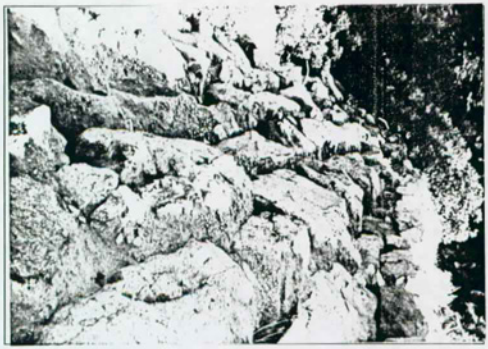


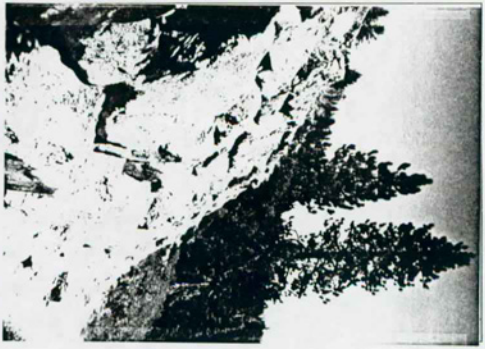
B. Cobblestone Embankment Wall

There is one major cobblestone embankment wall along the road (Mileage – 10.70) in the Clark Range View vicinity.

Description – This large cobblestone embankment wall on the downslope side of the road is approximately 280 feet in length and 10-30 feet in height. It has no parapet wall above the surface of the roadway and turnout/shoulder. The wall supports the road and 10-foot-wide unpaved turnout/shoulder. It consists primarily of large layered boulders/cobblestones.

Condition – The wall is in generally good condition.



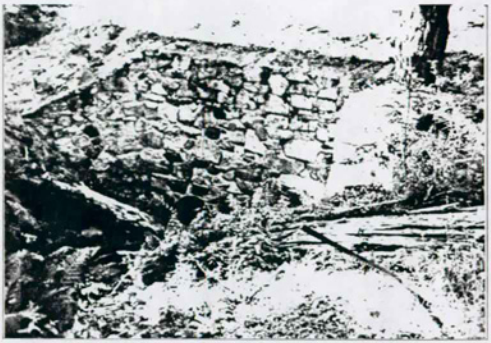


C. Large Stone Culvert

The only large extant stone culvert along Glacier Point Road is at Grouse Creek (Mileage – 4.95) on the west side of the Badger Pass Ski Area road where it intersects with the Glacier Point Road.

Description – This large cutstone/masonry culvert has headwalls and wingwalls some 10-15 feet in height and 15-20 feet in width on its upslope side. Two metal pipes, each approximately 3-4 feet in diameter, provide for water conveyance. The downslope side of the culvert does not have stone headwalls.

Condition – The culvert is in generally good condition, although it is partially obscured by fallen logs and other windfall/debris.



D. Small Stone Culverts

There are numerous small cutstone/masonry culverts along the Glacier Point Road. Most of these structures consist of squared, rectangular rock headwall arches on the upslope side of the road with metal pipes (18"-24" in diameter) for water conveyance. On the downslope side of the road there generally are no rock headwalls round the metal pipes. Some of the culverts are cluttered with rocks, logs, and windfall. The following photographs are representative of the small culverts along the road.

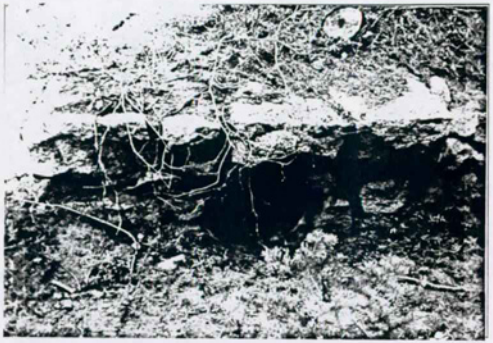
Culvert on upslope side of road – Mileage, 5.30

Culvert on upslope side of road – Mileage, 9.40

West side of Bridalveil Creek Campground road – Mileage, 7.75

East side of Bridalveil Creek Campground road – Mileage, 7.75

Culvert is adjacent to Glacier Point Road and conducts water under Bridalveil Creek Campground road.



Culvert on upslope side of road – Mileage, 9.85

Culvert on upslope side of road – Mileage, 12.95

Culvert on upslope side of road – Mileage, 13.40

Culvert on upslope side of road – Mileage, 14.10

Culvert on upslope side of road – Mileage 14.65

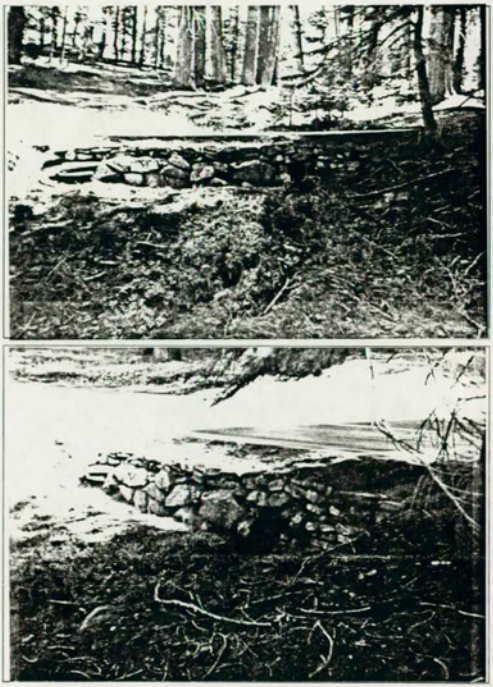
Culvert on upslope side of road – Mileage, 14.65

Culvert on upslope side of road – Mileage 15.10

Culvert on downslope side of road – Mileage, 15.10

Culvert on upslope side of road – Mileage, 15.25
(non-masonry culvert)

Culvert on downslope side of road – Mileage, 15.25
(non-masonry culvert)



Culvert on downslope side of road – Mileage, 15.75

This culvert is located just west of the Glacier Point parking area and may have been constructed during that area's renovation in the 1980s. It is non-masonry and is characterized by a long, wide headwall.

E. Bridalveil Creek Bridge

The Bridalveil Creek Bridge is the only bridge on the Glacier Point Road (Mileage – 8.25).

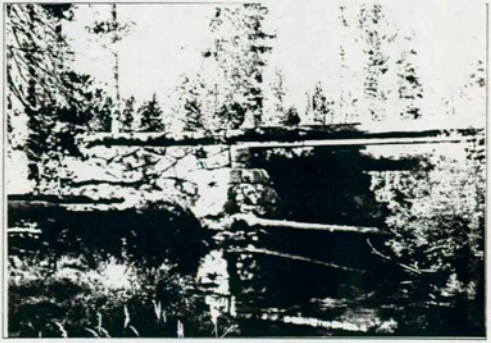
Description – The 35-foot-long bridge is a simple span steel stringer structure with a span length of 32.15 feet over Bridalveil Creek. Both abutments of the bridge are cutstone masonry, and the guard railings along the asphalt roadway are large logs (4-5 feet in diameter), thus leaving a rustic appearance. The deck of the bridge consists of 7-8-1/2" of reinforced concrete, and its width curb-to-curb is 24 feet, 8 inches.

Condition – The bridge is in generally good condition, and, according to Federal Highway Administration inspectors, has an estimated remaining life of some 15 years.

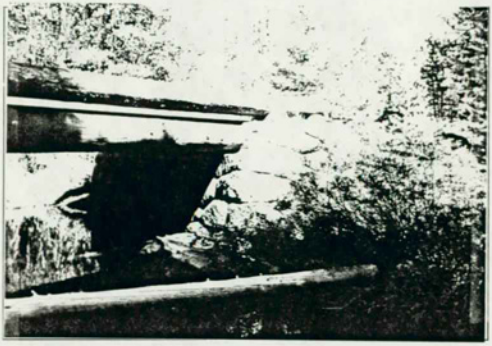
Looking west

Looking east

Upstream side

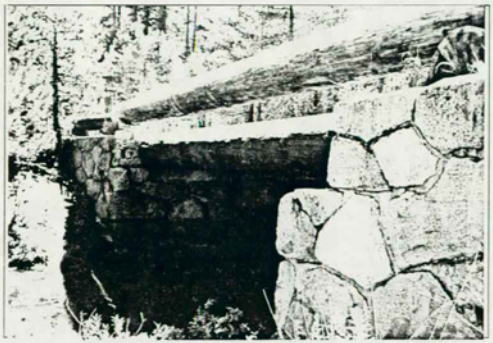


Upstream side – east abutment



Upstream side – west abutment

Downstream side



Downstream side

Downstream side – east abutment

Downstream side – west abutment

III. Assessment and Evaluation

Preparatory to renovation and modernization of the Glacier Point Road it was determined that the two stone walls along the roadway (Mileage – 1.85 and 1.90) should be assessed and evaluated to determine their historical significance and eligibility for listing on the National Register of Historic Places. The project was expanded to include research and reconnaissance of the entire 15.80-mile roadway, assessing the historical significance of all rock work long the road including embankment walls, culvert headwalls, and the abutments for the Bridalveil Creek Bridge. Thus, the thrust of the project was to assess the significance of the stone walls and other rock work by examining and photographing them and researching their construction and maintenance histories. A secondary purpose of the project was to prepare a short history of the entire Glacier Point Road, thus providing a framework and historical context within which the stone walls and rock work could be evaluated.

Contrary to the oft-repeated viewpoint that the stone walls and rock work along Glacier Point Road were built by Civilian Conservation Corps enrollees during the 1930s, research in the Yosemite Research Library resulted in documenting that all such resources were constructed either under contract or by day labor forces under the direction and supervision of the Bureau of Public Roads during that decade. Park records indicate that the CCC was not involved in the construction or maintenance of the road until the late 1930s when enrollees were engaged in removing slides and windfall from the road preparatory to opening it to vehicular traffic each spring.

Based on my research and reconnaissance of the Glacier Point Road I determined that the stone walls and other rock work associated with the road do not meet the necessary standards or criteria for significance and integrity to request a determination of eligibility for their inclusion on the National Register. This assessment and evaluation is based on the application of Criterion C of the National Register standards for significance as outlined in the Advisory Council on Historic Preservation's procedures 36 CFR 800. To be determined eligible for inclusion on the National Register under Criterion C, districts, sites, buildings, structures, and objects must "possess integrity of location, design, setting, materials, workmanship, feeling, and association" and "embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction." The stone work and rock walls along the Glacier Point Road possess neither distinctive and significant characteristics/components nor represent the work of a master and do not possess high artistic values. While the stone work and rock walls possess substantial integrity, they are not among the most significant, best preserved, and most extensive examples of such historic resources along park roads in Yosemite National Park. The

best and most prominent examples of such resources in the park, including hand-laid rock walls as well as cutstone bridges, culvert headwalls, and tunnels, are found along portions of the Big Oak Flat, El Portal, and Wawona roads.

IV. Recommendations for Management

While not meeting the National Register criteria for significance and integrity these resources contribute to the rural, rustic character and park road setting of Glacier Point Road. Thus, it is essential that this character and setting be preserved to the maximum extent possible and that impacts be held strictly to a minimum.

To date, comparable studies and assessments/evaluations for the other park roads in Yosemite, as well as most roads in other parks in the United States, have not been prepared. Research and reconnaissance of pre-World War II park roads should be conducted to provide a historical context within which to evaluate and assess the significance and integrity of rock work exhibited along all roadway corridors in the parks.

It is important that renovation and modernization of the Glacier Point Road be carried out in compliance with the provisions for park roads as set forth in the *Wilderness Management Plan, Yosemite National Park, 1989*. The plan provides detailed guidelines for the management, preservation, and operation of both the original and present Glacier Point roads.

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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