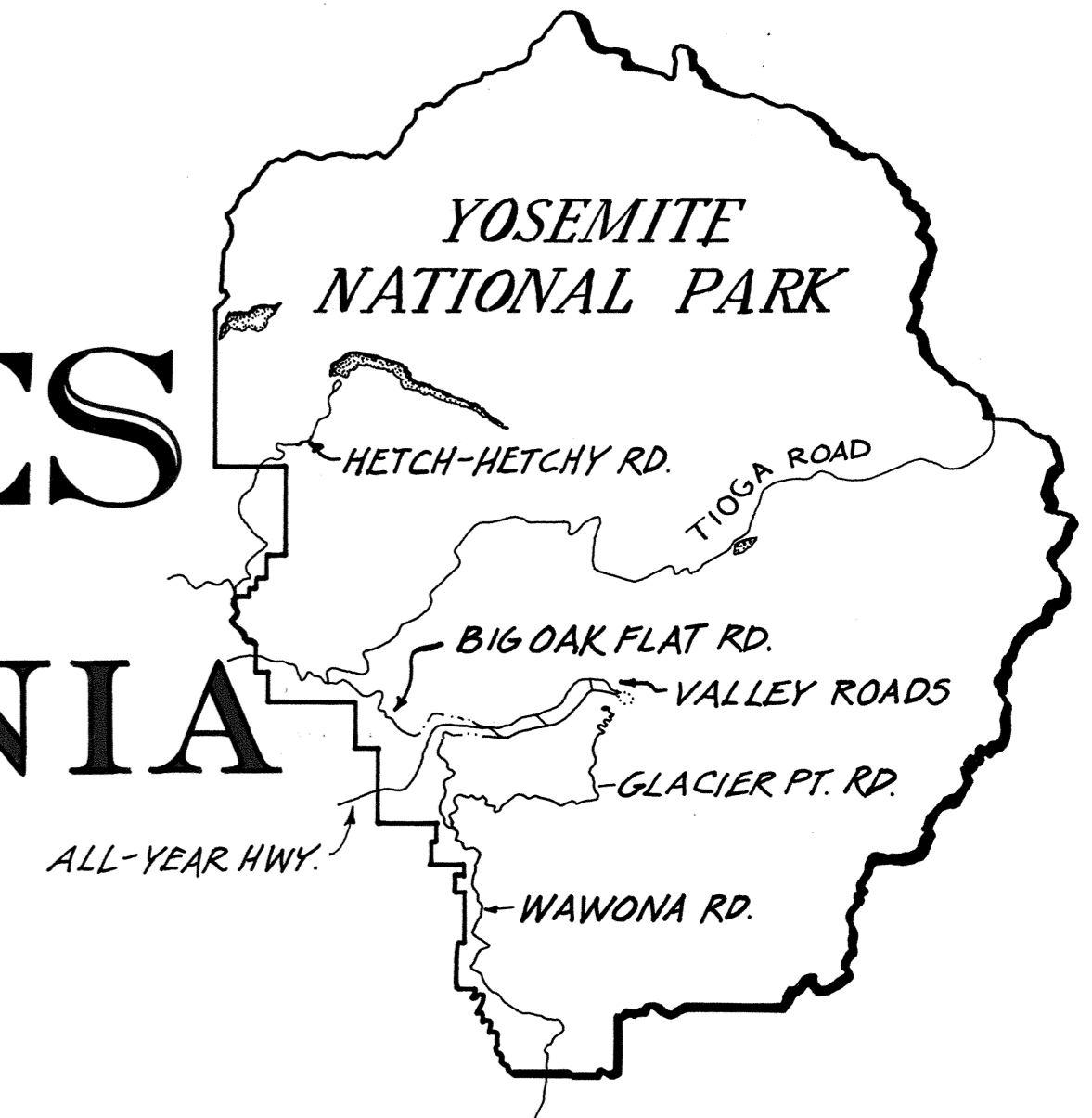


YOSEMITE ROADS & BRIDGES

YOSEMITE NATIONAL PARK, CALIFORNIA

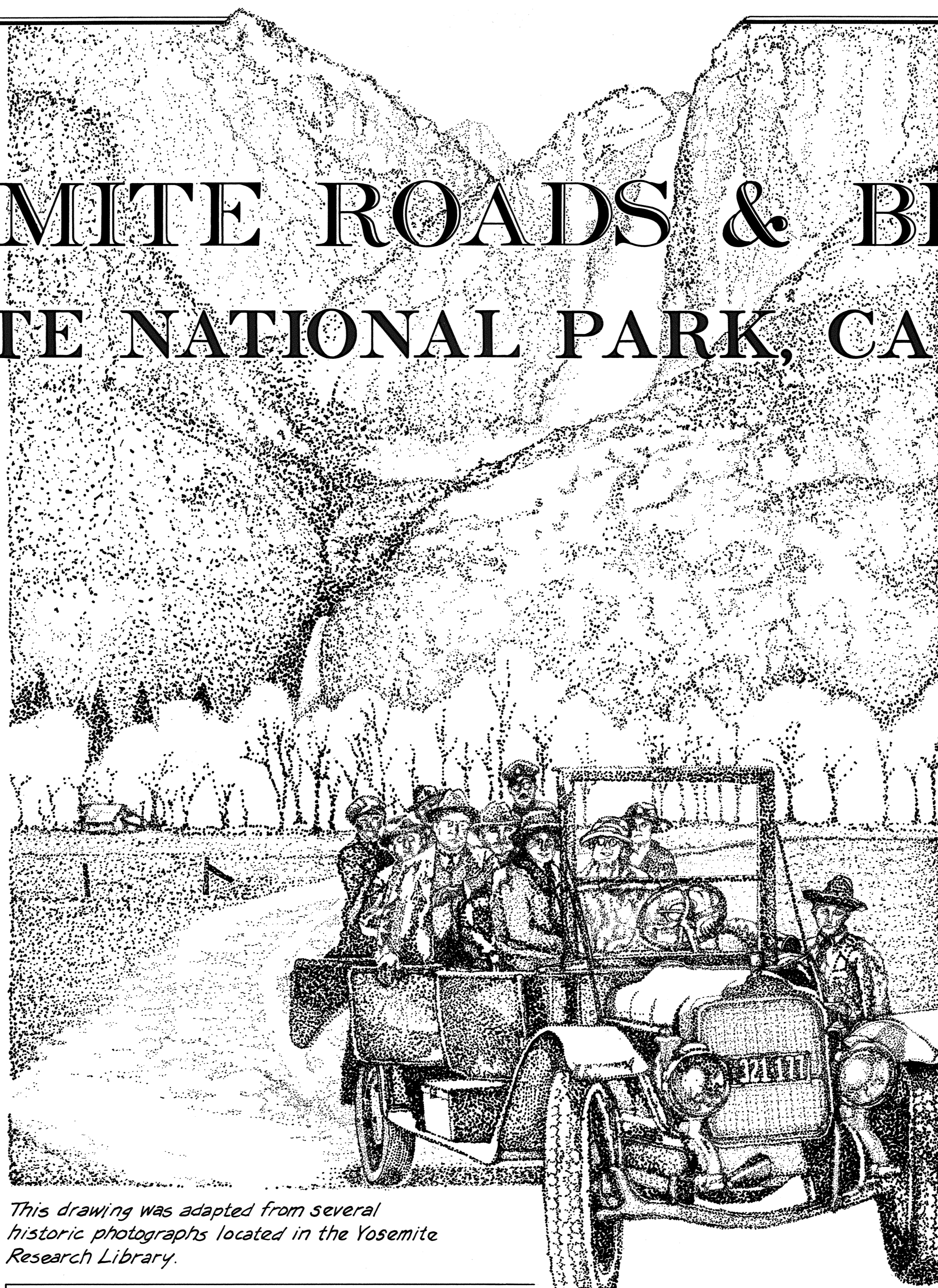


For more than two decades following the discovery of the Yosemite Valley in 1851, the only access to the Valley was by rough pack and foot trails. In 1864, the Yosemite Valley and the Mariposa Grove of giant sequoias were set aside by Congress as a protective reserve, but it would be another ten years before the first road reached the area.

Hoping to capitalize on tourism, citizens of Mariposa and Tuolumne counties sought to entice Yosemite-bound visitors by constructing toll roads into the Valley. By the early 1870s, private toll roads were under construction from Coulterville, Big Oak Flat and Mariposa. A great road-building race ensued. Each community hoped to finish its road first and thereby capture the tourist trade. Dr. John Taylor McLean completed his Coulterville Road before the others on 17 June 1874. His hopes for a transportation monopoly were dashed only twenty-nine days later when the "Chinese Camp and Yosemite Turnpike," forerunner of the Big Oak Flat Road, reached the Valley. From the south, a cartel headed by Albert Henry Washburn pushed another toll road from Mariposa to Big Tree Station (now Wawona) and on to the Valley in 1875. North of Yosemite Valley, the "Great Sierra Wagon Road" was completed through the high country to reach gold and silver mines near Tioga Pass in 1833. Though not built for the tourist trade, this route would evolve into the present Tioga Road, which at a height of nearly ten thousand feet, is the highest paved mountain highway in California. Construction of the early roads was a major engineering feat of the period: all of these early roads were built across the rough, mountainous terrain using hand labor, aided by picks, shovels and "Giant" blasting powder. On the Valley floor, the Board of Commissioners of the Yosemite Grant sporadically developed a system of carriage drives, connected by wood and iron truss bridges.

Yosemite was designated a national park in 1890. The United States Cavalry assumed command of the park's administration and managed affairs until 1914. During this period, they oversaw the construction of three small bridges at the base of Bridalveil Fall in 1913.

In 1900, the first automobile struggled over steep, unimproved and inadequate roads to reach the Valley. Although they were banned by the park's acting military administration in 1907, the age of the automobile had nearly arrived, and in 1913, Secretary of the Interior,



This drawing was adapted from several historic photographs located in the Yosemite Research Library.

This recording project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. HAER is an agency of the National Park Service, U.S. Department of the Interior. The Yosemite Roads and Bridges Project was co-sponsored by Yosemite National Park, Michael Finley, Superintendent; Kevin Cann, Chief of Maintenance and Engineering; the NPS Roads and Bridges Program, John Gingles, Manager; and the Historic American Buildings Survey/Historic American Engineering

Record (HABS/HAER) under the general direction of Robert J. Kapsch, Chief.

The fieldwork, measured drawings, histories and photographs were completed under the direction of Eric DeLony, Chief and Principal Architect, HAER. The recording team consisted of Industrial Designer Todd A. Croteau, field supervisor; Architectural Technicians Dione DeMartelaere, David R. Fleming and Marie-Claude LeSautour; Project Historian, Richard H. Quin. Formal on-site photography was done by Brian C. Grogan

Franklin K. Lane opened park gates to the new and soon-to-be dominant form of transportation.

The National Park Service was created in 1916 to protect the Nation's most important scenic and cultural resources. Its first Director, Stephen T. Mather, was a native Californian deeply interested in the Yosemite Valley. In 1915, when he was still Assistant Secretary of the Interior, Mather and some business associates purchased the old Tioga Road and deeded it over to the park. As Director, he signed a Memorandum of Agreement with the Bureau of Public Roads (BPR) in 1925, under which the BPR would take charge of road construction in the national parks. Following the policies described by the Organic Act, the NPS worked with the Bureau of Public Roads to ensure that the new Yosemite road system was designed to blend with the natural setting. In the 1930s, the Wawona, Big Oak Flat and parts of the Tioga Road were constructed under BPR supervision. To preserve the park landscape, miles of stone retaining walls were designed to conceal the roads from principal views, and four tunnels were constructed to avoid scarring of granite cliffs. One of these, the Wawona Tunnel, was the longest in the West at the time of its construction in 1933. In Yosemite Valley, the NPS landscape architecture division and the BPR collaborated to design a series of "rustic-style" bridges, made of concrete and steel, but faced with granite or large redwood logs so as to integrate with the natural setting.

After World War II, the Federal Highway Administration and the National Park Service completed the reconstruction of the old Tioga Road as a modern park highway, to the delight of motorists but to the dismay of some conservationists. In the 1980s, annual visitation passed the three million mark and park roads are now approaching their carrying capacity. Today, on-going road improvement plans and new park environmental policies pose a threat to road structures throughout Yosemite. The Historic American Engineering Record, a division of the National Park Service, documented significant features of the road system in 1991. Histories, measured drawings and photographs produced by HAER will be used to evaluate the features as historic structures, significant in portraying the character of the park. Should they be destroyed, a historic record exists to guide the integrity of future construction endeavors.

DELINEATED BY: DIONE M. DE MARTELAERE 1991

YOSEMITE ROADS AND BRIDGES
RECORDING PROJECT
UNITED STATES DEPARTMENT OF THE INTERIOR

YOSEMITE NATIONAL PARK

YOSEMITE ROADS AND BRIDGES
MARIPOSA COUNTY

CALIFORNIA

HISTORIC AMERICAN
ENGINEERING RECORD
CA - 117

SHEET
1 OF 2

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YOSEMITE ROADS & BRIDGES

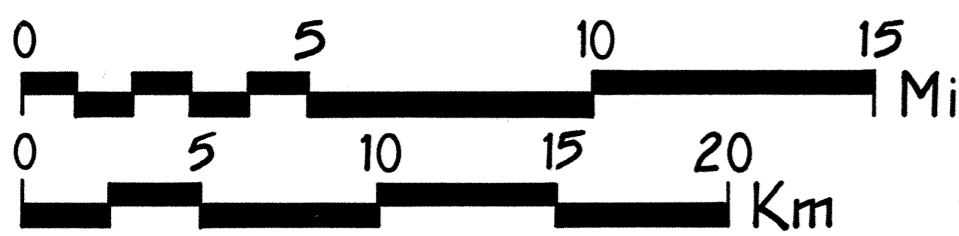
HISTORICAL BASE MAP

1874 - PRESENT

LEGEND

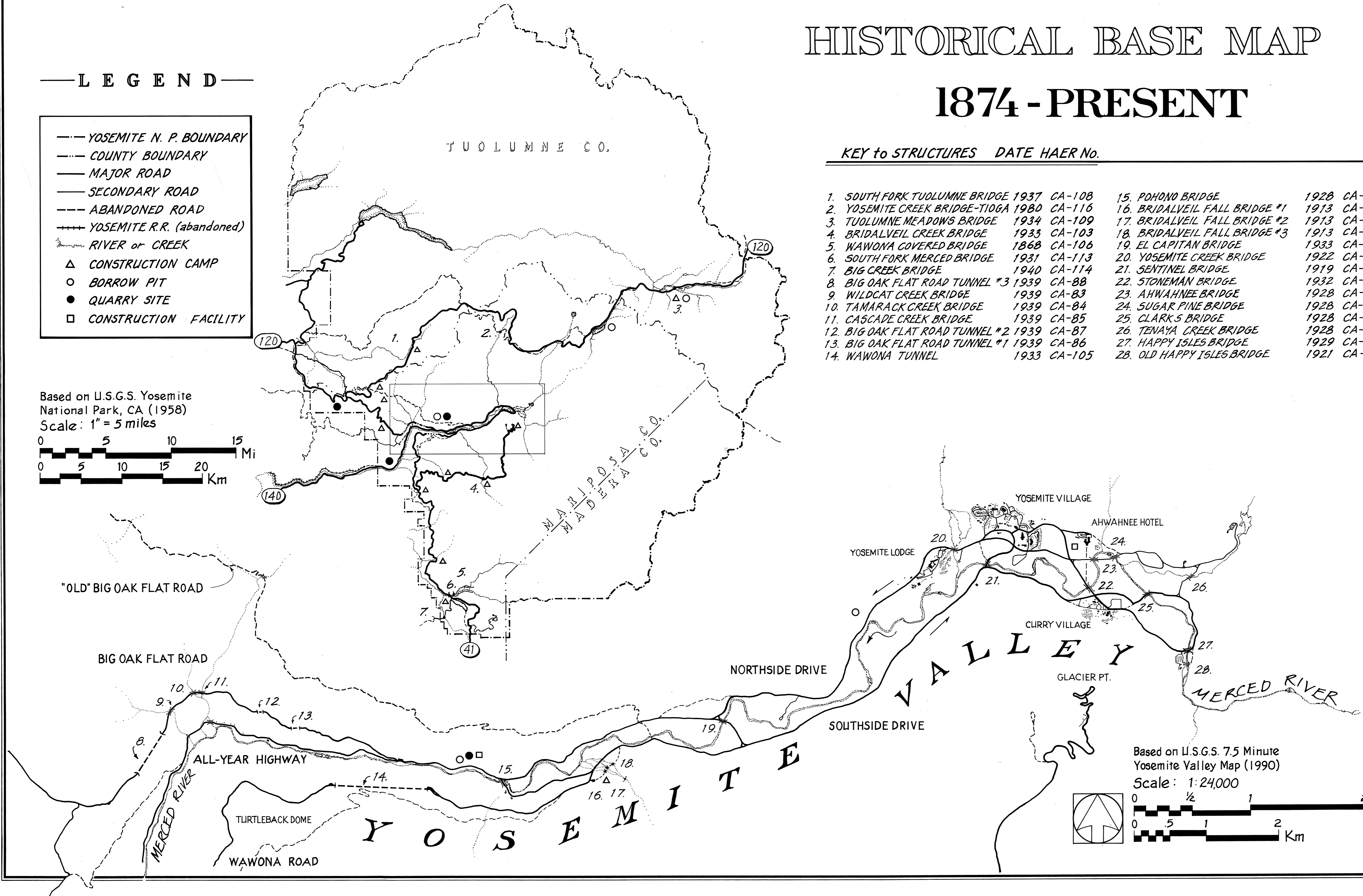
- YOSEMITE N. P. BOUNDARY
- COUNTY BOUNDARY
- MAJOR ROAD
- SECONDARY ROAD
- ABANDONED ROAD
- YOSEMITE R.R. (abandoned)
- RIVER or CREEK
- △ CONSTRUCTION CAMP
- BORROW PIT
- QUARRY SITE
- CONSTRUCTION FACILITY

Based on U.S.G.S. Yosemite National Park, CA (1958)
Scale: 1" = 5 miles



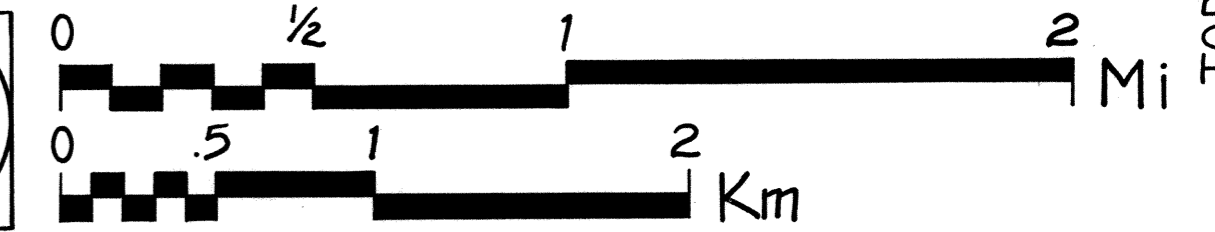
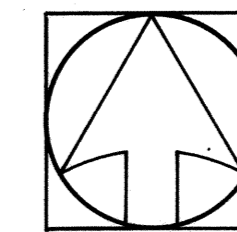
KEY to STRUCTURES DATE HAER No.

1. SOUTH FORK TUOLUMNE BRIDGE	1937	CA-108	15. POHONO BRIDGE	1928	CA-90
2. YOSEMITE CREEK BRIDGE-TIOGA	1980	CA-116	16. BRIDALVEIL FALL BRIDGE #1	1913	CA-91
3. TUOLUMNE MEADOWS BRIDGE	1934	CA-109	17. BRIDALVEIL FALL BRIDGE #2	1913	CA-92
4. BRIDALVEIL CREEK BRIDGE	1933	CA-103	18. BRIDALVEIL FALL BRIDGE #3	1913	CA-93
5. WAWONA COVERED BRIDGE	1868	CA-106	19. EL CAPITAN BRIDGE	1933	CA-101
6. SOUTH FORK MERCED BRIDGE	1931	CA-113	20. YOSEMITE CREEK BRIDGE	1922	CA-102
7. BIG CREEK BRIDGE	1940	CA-114	21. SENTINEL BRIDGE	1919	CA-94
8. BIG OAK FLAT ROAD TUNNEL #3	1939	CA-88	22. STONEMAN BRIDGE	1932	CA-95
9. WILDCAT CREEK BRIDGE	1939	CA-83	23. AHWAHNEE BRIDGE	1928	CA-100
10. TAMARACK CREEK BRIDGE	1939	CA-84	24. SUGAR PINE BRIDGE	1928	CA-99
11. CASCADE CREEK BRIDGE	1939	CA-85	25. CLARK'S BRIDGE	1928	CA-96
12. BIG OAK FLAT ROAD TUNNEL #2	1939	CA-87	26. TENAYA CREEK BRIDGE	1928	CA-98
13. BIG OAK FLAT ROAD TUNNEL #1	1939	CA-86	27. HAPPY ISLES BRIDGE	1929	CA-97
14. WAWONA TUNNEL	1933	CA-105	28. OLD HAPPY ISLES BRIDGE	1921	CA-104



Based on U.S.G.S. 7.5 Minute Yosemite Valley Map (1990)

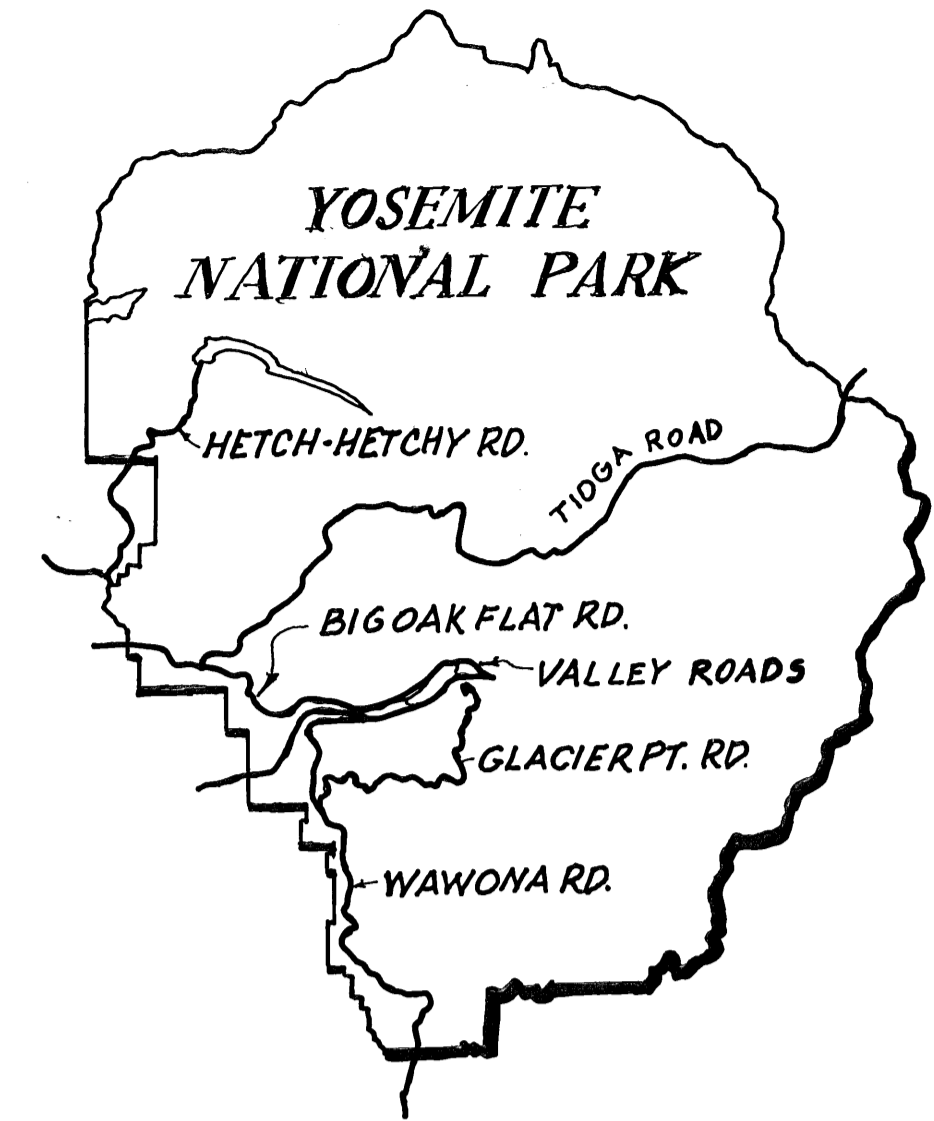
Scale: 1:24,000





YOSEMITE

National Park Roads and Bridges



Tourists began visiting Yosemite Valley in the 1850s to see its "scenes of wonder and curiosity." The journey was extremely difficult, as no roads yet existed. Early visitors endured miles of arduous travel over primitive horse trails. They often arrived too exhausted to fully enjoy the glorious landscape awaiting them.

Following the designation of the Yosemite Grant by the federal government in 1864, citizens in Tuolumne and Mariposa counties sought to entice Yosemite-bound visitors by constructing toll roads to the valley. In the early 1870s, companies constructing toll roads from the communities of Coulterville, Mariposa and Big Oak Flat raced to be the first to complete a wagon route and profit from the resulting traffic. The Coulterville & Yosemite Turnpike won, opening on 17 June 1874. The Chinese Camp & Yosemite Turnpike reached the valley from Big Oak Flat less than a month later. A year later, Albert Henry Washburn and his partners pushed a road from Mariposa to Big Tree Station (Wawona) and on to Yosemite Valley. These roads were difficult to construct, as only hand tools and blasting powder were available. The three toll road companies competed for a limited number of visitors. The Big Oak Flat Road managed to break even, but the Coulterville Road was a financial disaster. Only the Washburn group realized any substantial return on their investment.

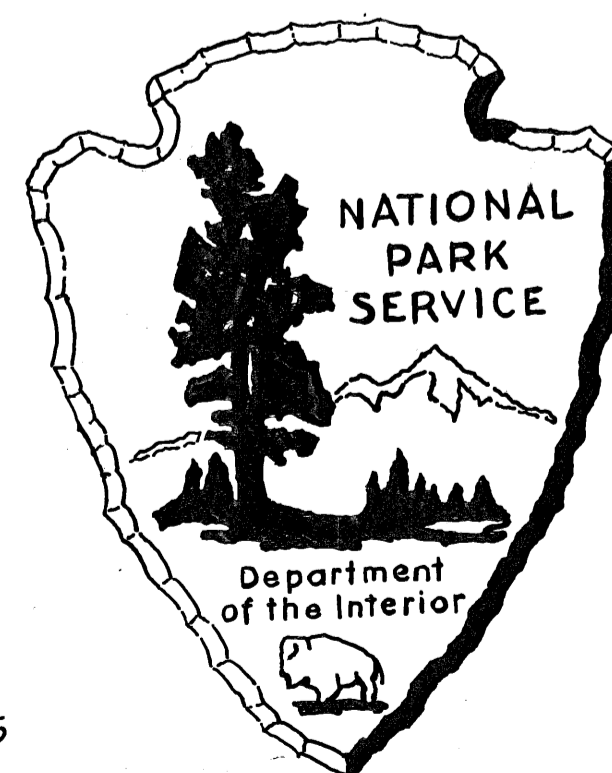
The construction of toll roads allowed stagecoaches to replace saddle horses as the primary means of transportation to Yosemite. With the extension of railway service to nearby communities, stagecoach companies began regular service to and from the valley. The trip remained difficult, as the primitive roads were steep, narrow, and dusty.

North of Yosemite Valley, The Great Sierra Consolidated Silver Mining Company constructed a wagon road to serve its mines on the Sierra Crest in 1882. The Great Sierra Wagon Road, commonly called the Tioga Road, remained in use for only a year before the mines played out and the road was abandoned. In 1907, the Yosemite Valley Rail Road completed a line to El Portal on the western edge of the park and built a connecting stage



View from Inspiration Point along Old Wawona Road

This project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The HAER program is administered by the Historic American Buildings Survey/Historic American Engineering Record Division (HABS/HAER) of the National Park Service, U.S. Department of the Interior. The Yosemite National Park Roads and Bridges II Recording Project was cosponsored during the summer of 2001 by HAER and Yosemite National Park. The project was funded by the Federal Lands Highway Program through the National Park Service Park Roads and Parkways Program.



The field work, measured drawings, historical reports, and photographs were prepared under the direction of Program Manager Todd A. Croteau and Tim Davis, Program Historian. The recording team consisted of Todd Delyea, field supervisor; landscape architects Ann Kero and Elliott Harwell; architects Walton Stowell and Anne Teresiak (ICOMOS intern, Germany). Formal large-format photography was done by Brian Grogan.

Special thanks to Librarian Linda Eade and Historian Jim Snyder for their assistance with researching the archives.

road to the valley. Most visitors took this route and the longer stage roads declined. By the early twentieth century, the roads came under government control.

The first automobile entered Yosemite Valley in 1900. In response to increasing automobile traffic, park authorities banned their use in 1907. Outraged motorists aided by the California Automobile Association convinced the Secretary of the Interior to overturn the ban in 1913. The automobile soon became the favored mode of transportation. The State of California built the improved "All-Year Highway" up the Merced River to El Portal, and motorists began using this route in conjunction with the former stage road to reach the valley in all seasons.

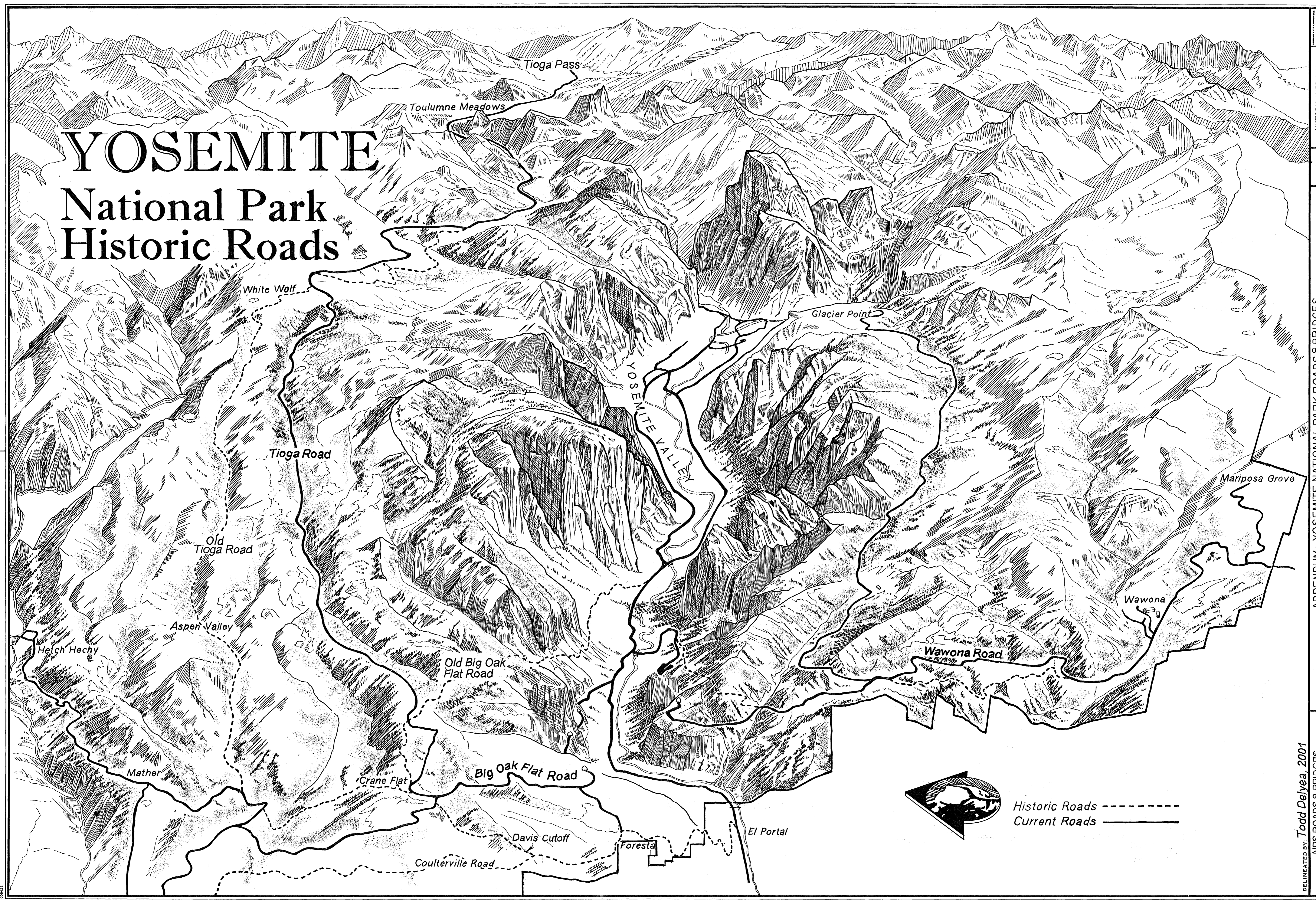
In the 1930s the federal government reconstructed the principal park roads to facilitate automobile travel. The National Park Service and the Bureau of Public Roads rebuilt the Wawona Road and relocated much of the Big Oak Flat Road to provide for a safer and faster approach to the Valley. Improvements included the construction of four tunnels to avoid massive scars to the valley walls and the provision of overlooks to allow motorists to take in the striking views. The long-neglected Tioga Road was repaired and put back into service. The State of California built a connecting road up to Tioga Pass, and the road became an important route across the mountains. Much of this road was rerouted in the 1950s during the National Park Service's Mission 66 program. The newly widened and straightened roadway was reopened in 1961.

The Yosemite roads, both old and new, are significant for their engineering achievements, for the role they played in the development and enjoyment of Yosemite, and for the way in which they were constructed to harmonize with their natural settings. Natural materials were often used in the construction of road-related structures, and rustic-style amenities complemented the landscape. Travel on the park roads today is far easier than it was in the nineteenth century, but the experience remains a compelling adventure for visitors to one of America's most popular national parks.

DELINEATED BY: Team, 2001
NPS ROADS & BRIDGES RECORDING PROGRAM
UNITED STATES DEPARTMENT OF THE INTERIOR
YOSEMITE VICINITY
MARIPOSA & TUOLUMNE COUNTIES
CALIFORNIA | 019
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YOSEMITE National Park Historic Roads



DELINEATED BY: **Todd Delyea, 2001**
 NPS ROADS & BRIDGES
 RECORDING PROGRAM
 NATIONAL PARK SERVICE
 UNITED STATES DEPARTMENT OF THE INTERIOR

YOSEMITE VICINITY

MARIPOSA & TUOLUMNE COUNTIES

APPENDUM: YOSEMITE NATIONAL PARK ROADS & BRIDGES

CALIFORNIA

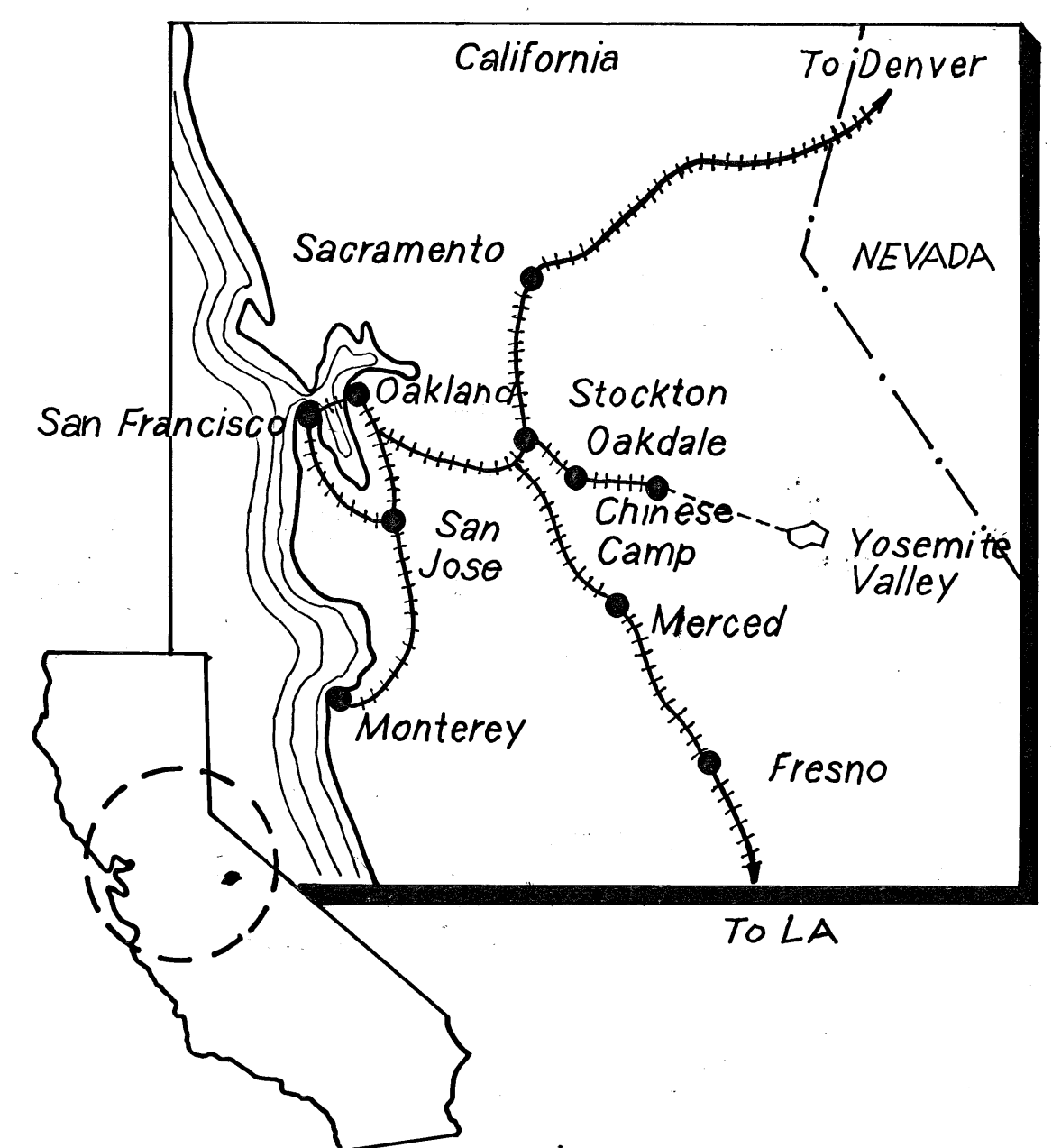
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RACE TO THE VALLEY



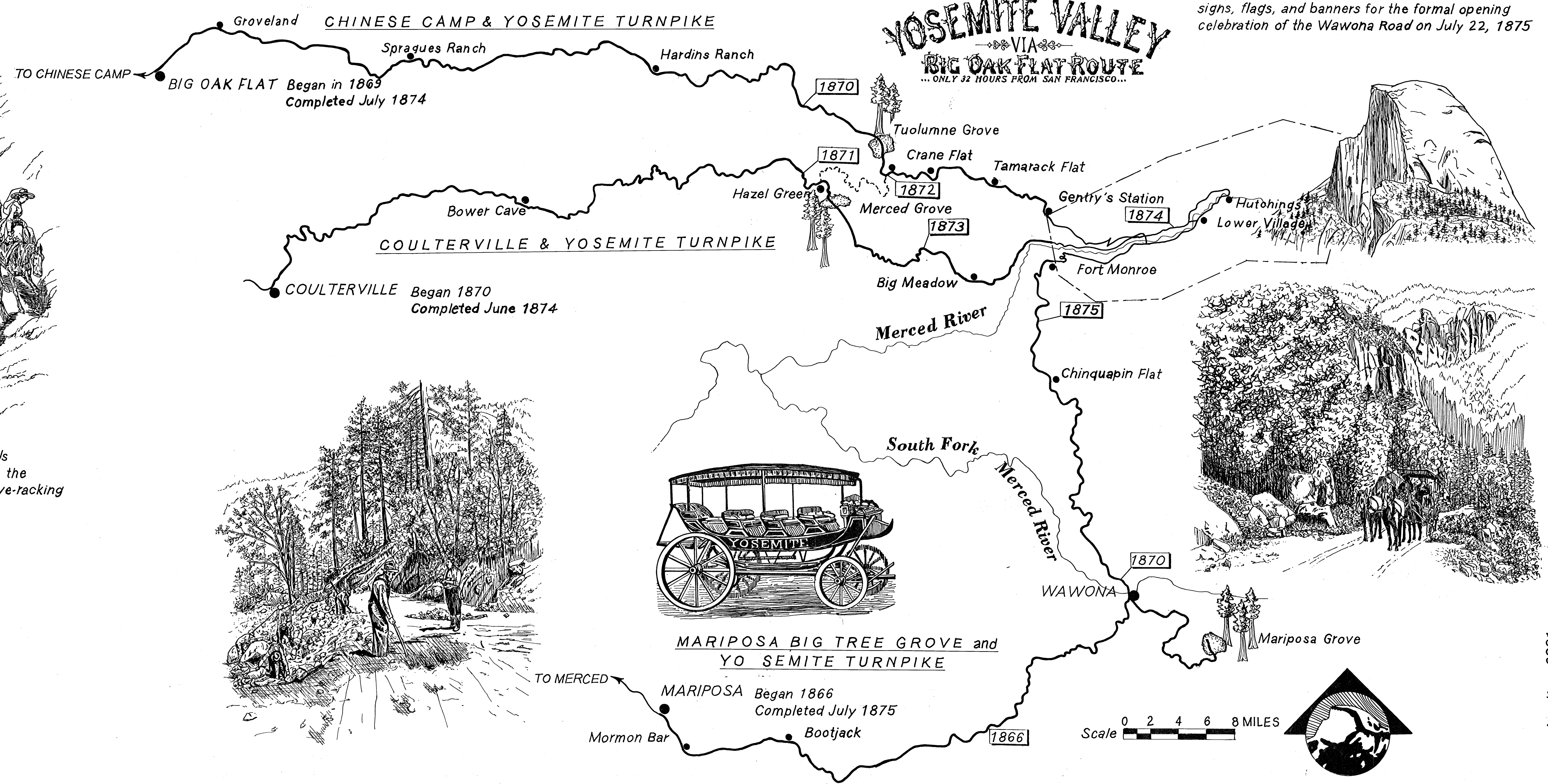
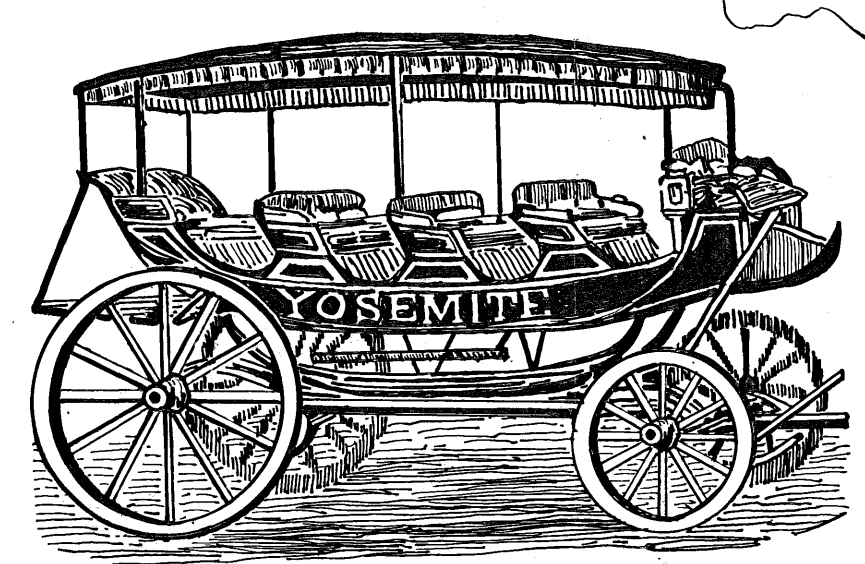
As interest in the wonders of Yosemite Valley increased, three rival companies sought to construct wagon roads to the Valley in order to capture tolls from the visitors. The Coulterville & Yosemite Turnpike was completed in June 1874, and the rival Chinese Camp & Yosemite Turnpike (Big Oak Flat Road) less than a month later. From the south, the Mariposa Big Tree Grove and Yo Semite Turnpike (Wawona Road) reached the Valley the following year. With competition from the north and west divided, only the Wawona Road proved profitable. All of the roads were purchased by the government by the 1910s.



Coulter and Murphy's Hotel was decorated with signs, flags, and banners for the formal opening celebration of the Wawona Road on July 22, 1875



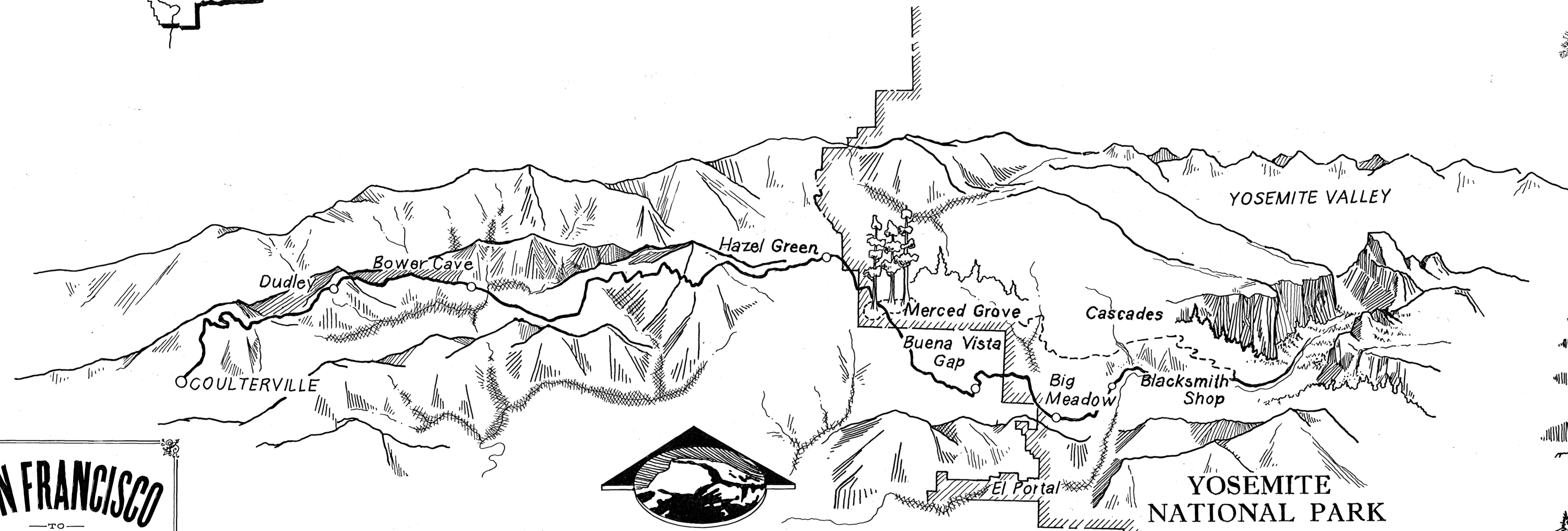
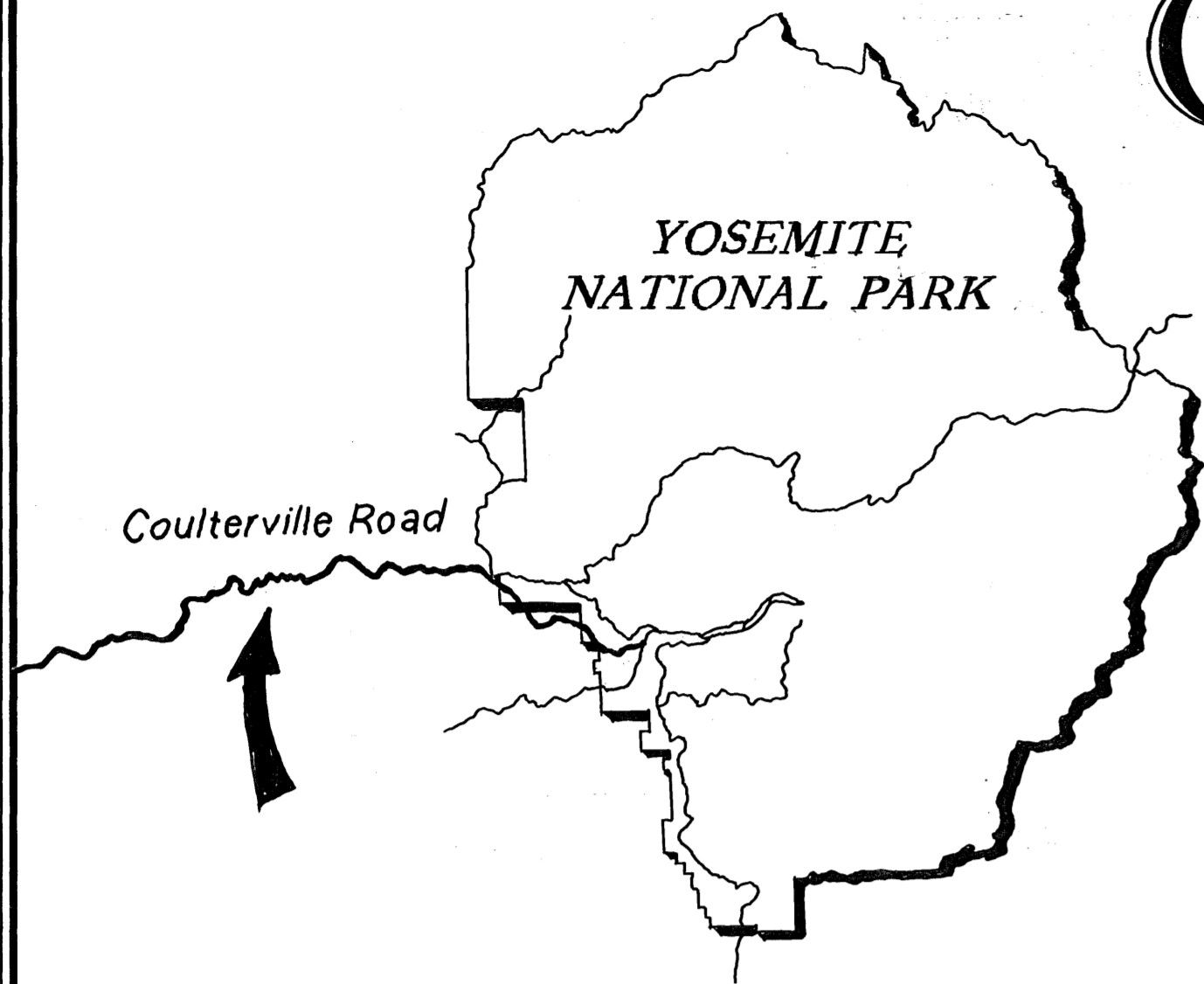
Descending the steep trails into Yosemite Valley from the Rim was a precarious nerve-racking experience for visitors.



DELINEATED BY: Ann Kero 2001
 NPS ROADS & BRIDGES RECORDING PROGRAM
 UNITED STATES DEPARTMENT OF THE INTERIOR
 ADDENDUM: YOSEMITE NATIONAL PARK ROADS & BRIDGES
 YOSEMITE VICINITY
 MARIPOSA & TUOLUMNE COUNTIES
 CALIFORNIA
 SHEET 3 OF 19
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COULTERVILLE ROAD 1874

The first road to reach the Valley, the Coulterville and Yosemite Turnpike was begun by investors in the small mining town of Coulterville but completed in 1874 by Dr. John Taylor McClean. Running from Bower Cave on the Merced to the Valley floor at Cascade Creek, its monopoly was short-lived and the road never carried the expected loads of tourists. In 1913, it became the first road in the park over which automobiles could legally travel. Most of the road was closed in 1982 following the massive "Cookie" rockslide; it is now a hiking trail.



The Coulterville Road passed directly through the Merced Grove of Big Trees, a primary attraction for early visitors to Yosemite.

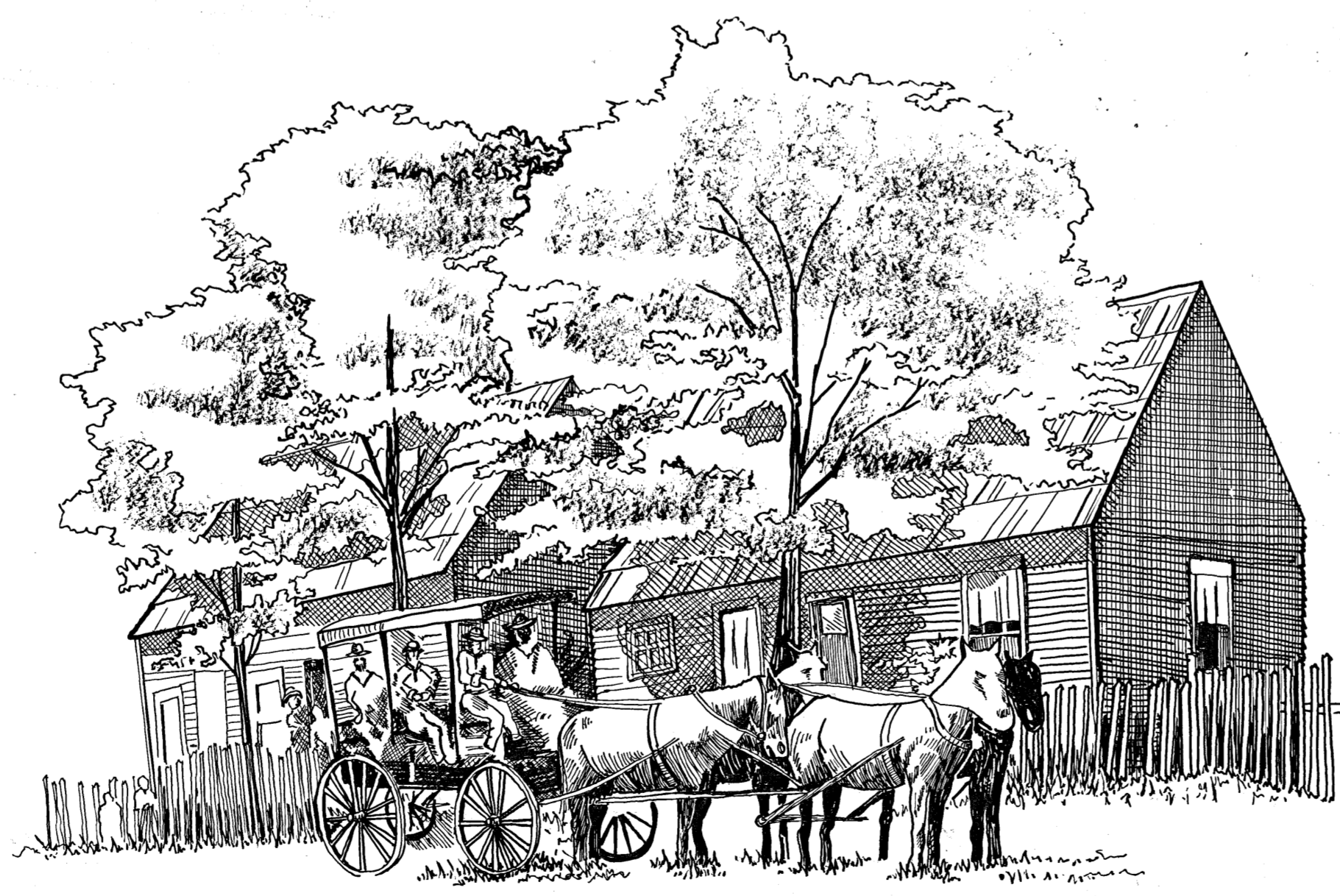
SAN FRANCISCO
TO
YO SEMITE

36 HOURS 36
Completion of the
NEW ALL-WAGON ROAD
Via **MERCED!**
Snellings, Coulterville, Dudley's, Bower Cave, Hazel Green
Merced Grove of Big Trees,
AND THE CASCADES, TO HOTELS.
Avoiding any Horseback Riding!

Commencing June 18, 1874.
Leave San Francisco via Oakland, 7:00 A. M.
Pass Lathrop, (Lunch) 11:35 " "
Arrive Merced, (Dinner) 4:30 P. M.
Leave do 8:00 "
Arrive Snellings, stop over night, (Supper) 8:00 P. M.
Leave do (Breakfast) 5:00 A. M.
By Washburn & McCready's Stages on "Holid dates"
of the Month.
Pass Dudley's, (Dinner) 12:00 Noon
Arrive Yo Semite Hotel, same evening 7:00 P. M.

RETURNING:
Leave Yo Semite, 3:00 A. M.
Arrive Merced Same Day, (Stop over night) 8:00 P. M.
Leave do 5:30 A. M.
Arrive San Francisco, 12:40 P. M.
Making return trip in 32 Hours.

For Railroad Tourist TICKETS and other information
Apply at
No. 3 Cor. Market & New Montgomery Sts.
SAM. MILLER,
Tourist Agent.



Hazel Green acted as the lunch stop on the Coulterville Road for many years. From Hazel Green the road headed south through the Merced Grove then southwest past Buena Vista gap for the first views of Yosemite Valley.



An early automobile heads down the steepest section of the Coulterville Road towards its junction with the Merced River.



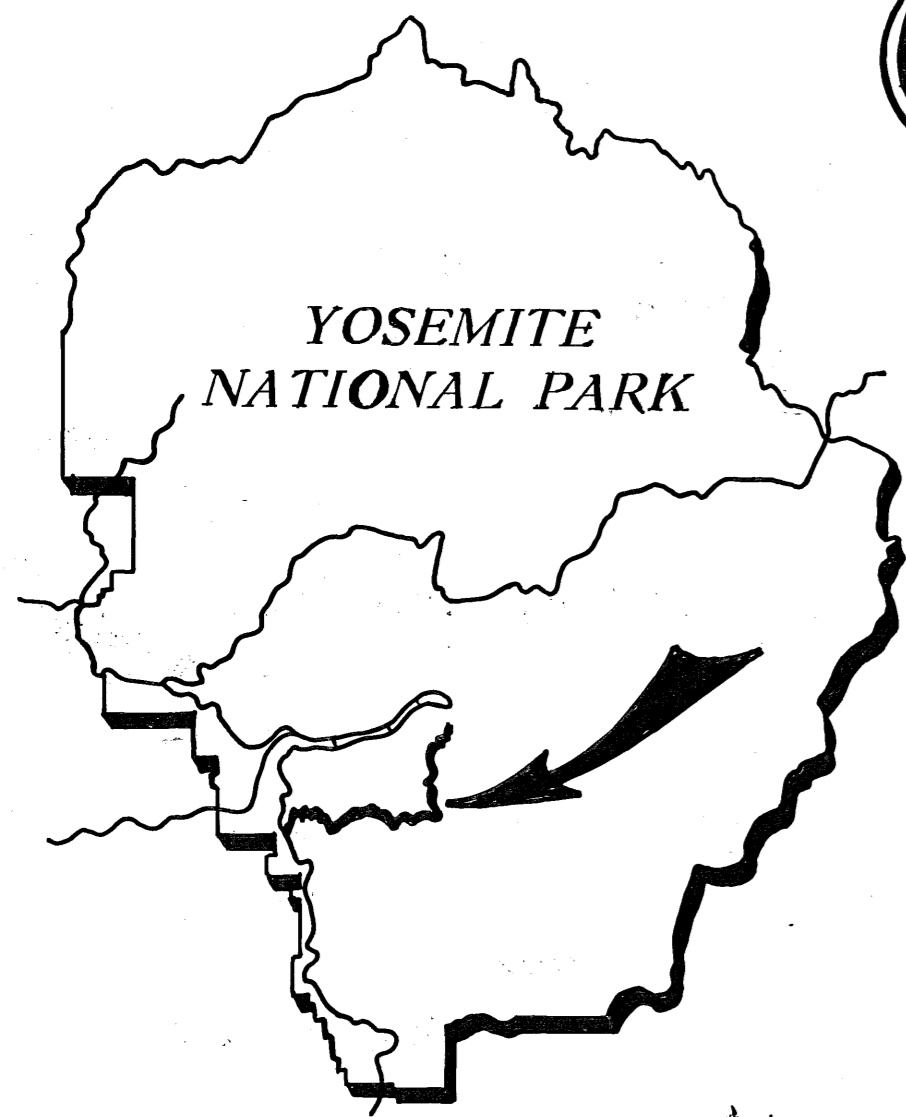
The Coulterville Roads "Collision with the geological history of the park was inevitable" claimed Yosemite's superintendent, After a rockslide closed it on April 3, 1982.

DELINEATED BY: **Todd Delyea, 2001**
NPS ROADS & BRIDGES RECORDING PROGRAM
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

YOSEMITE VICINITY
MARIPOSA & TUOLUMNE COUNTIES
CALIFORNIA 4 of 19
SHEET
HISTORIC AMERICAN ENGINEERING RECORD
CA-117

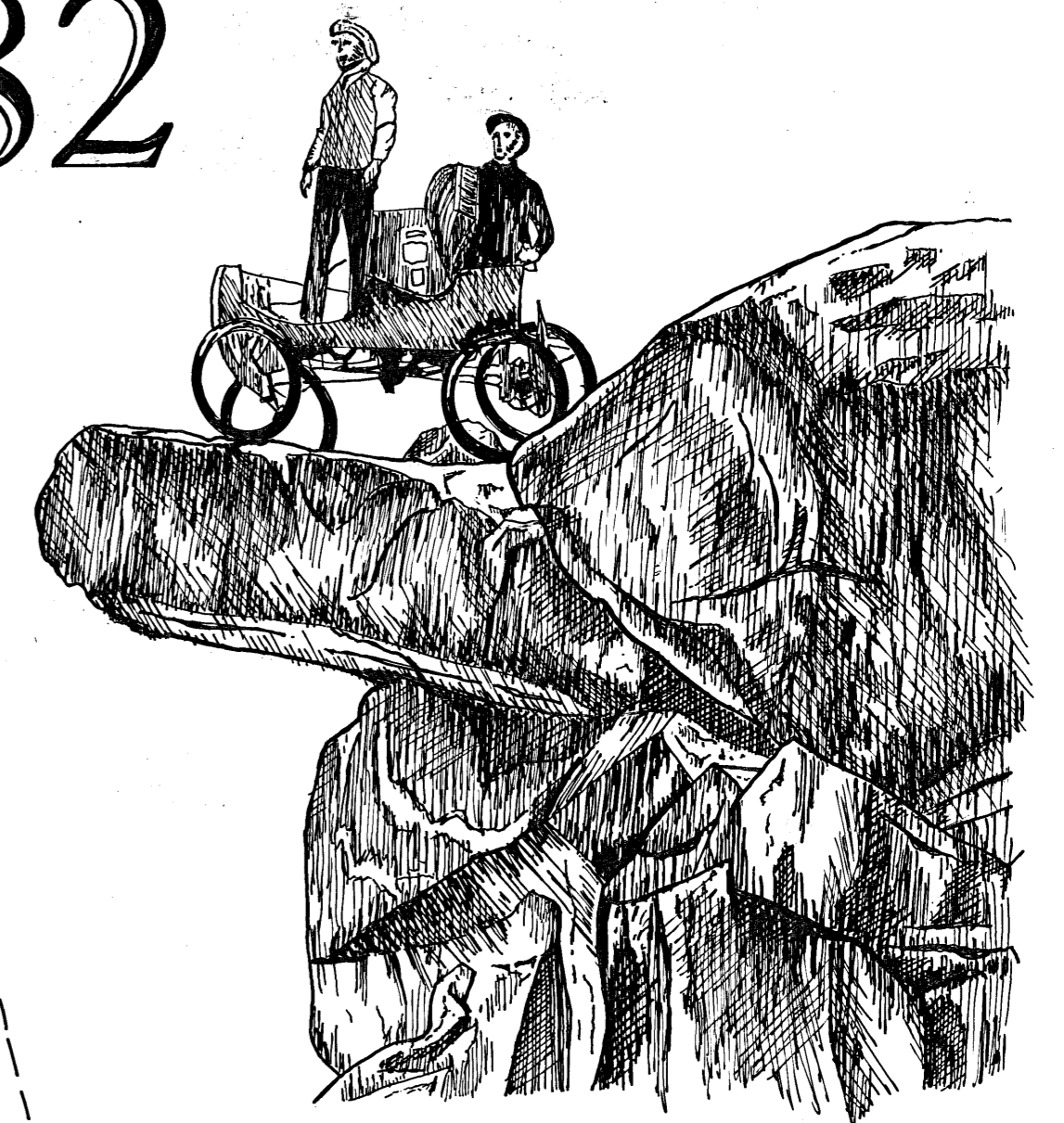
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GLACIER POINT ROAD 1882

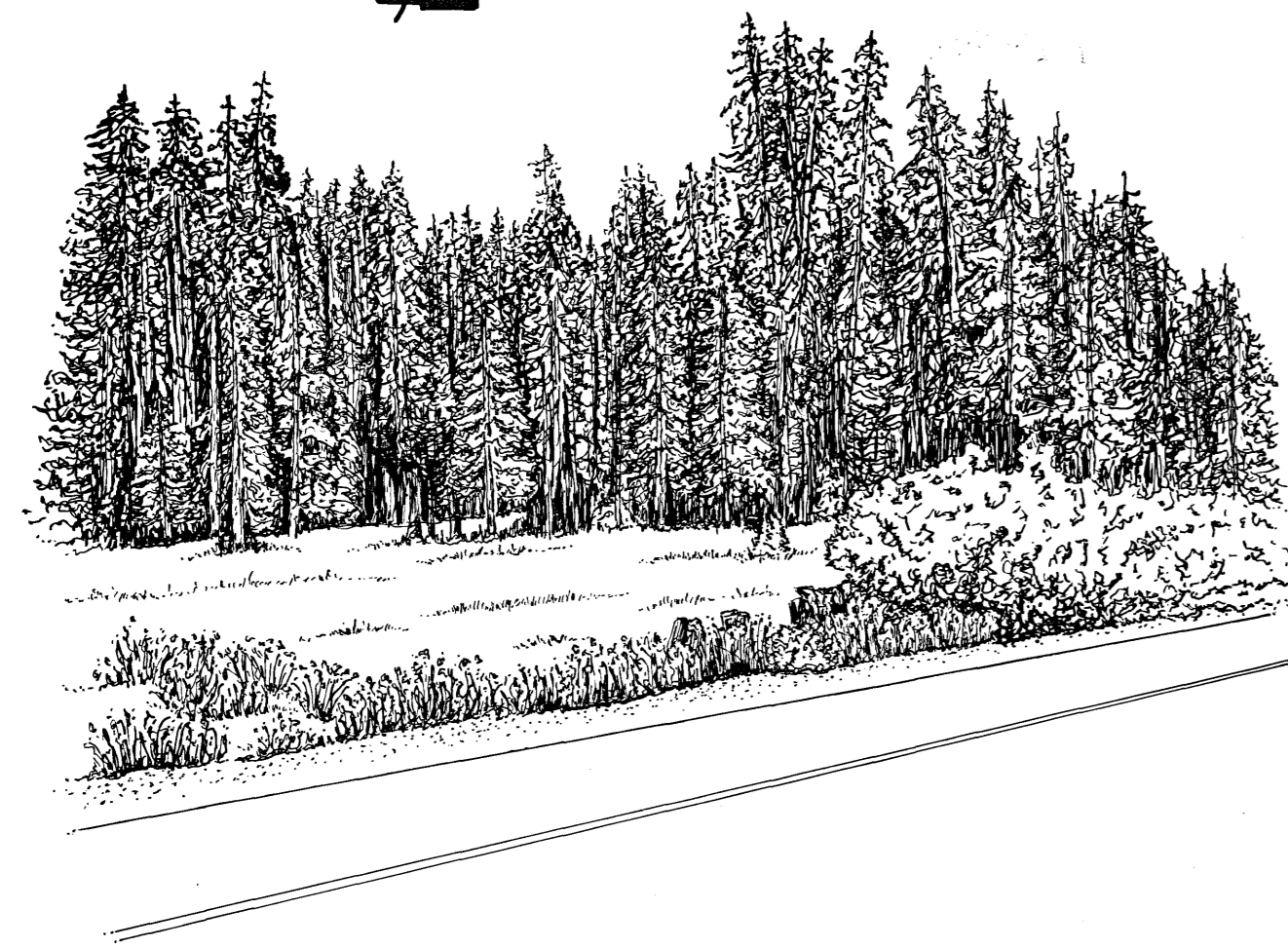


YOSEMITE NATIONAL PARK

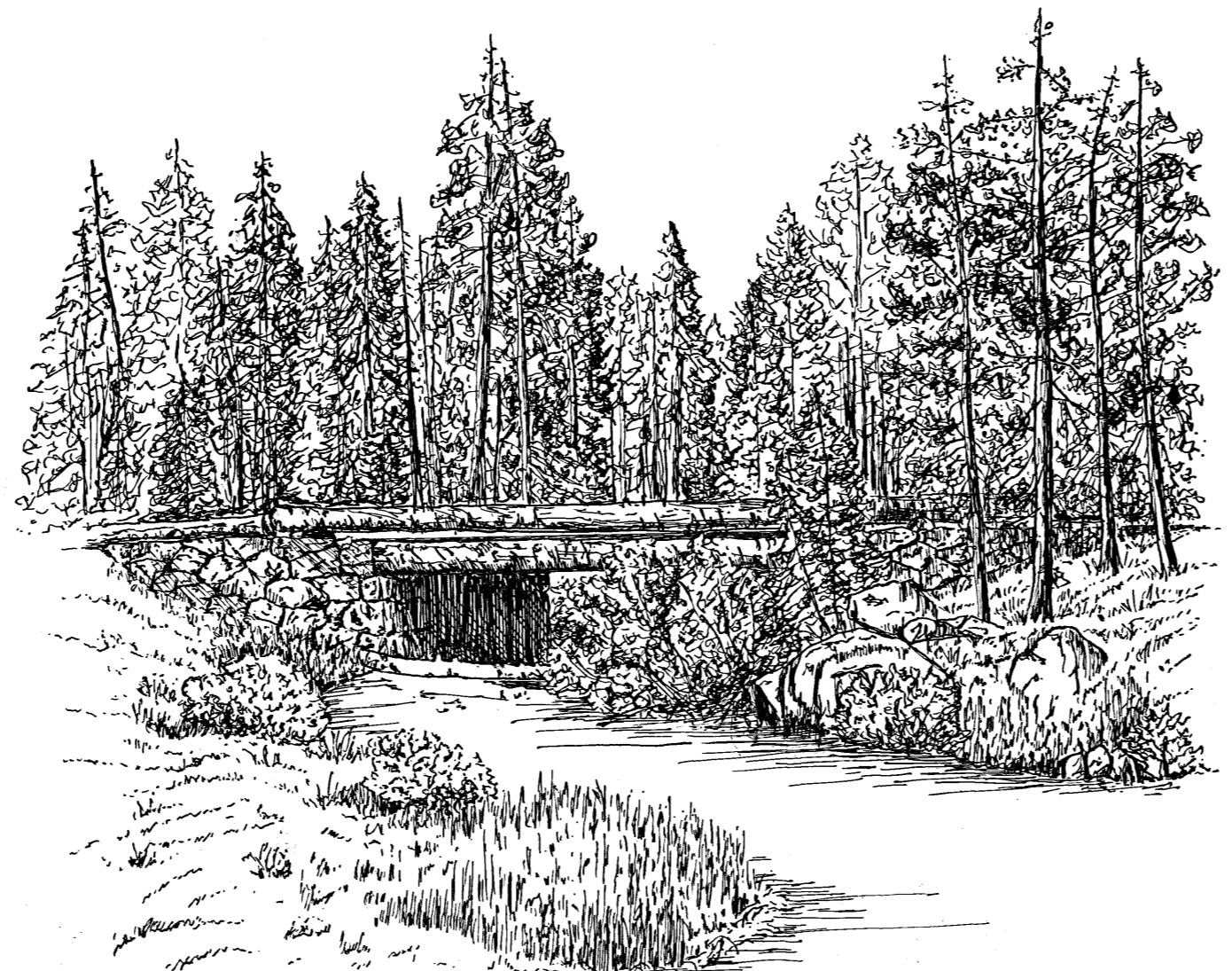
The proprietors of the Wawona Road engaged veteran roadbuilder John Conway to rebuild a saddle trail from Chinquapin Flat to Glacier Point, a promontory offering some of the most spectacular views of Yosemite Valley. Conway completed the road in 1882 at a cost of \$8,000. Reconstructed by the government in the 1930s, it continues to delight visitors with its far-reaching vistas.



First Auto in Park at Glacier Point



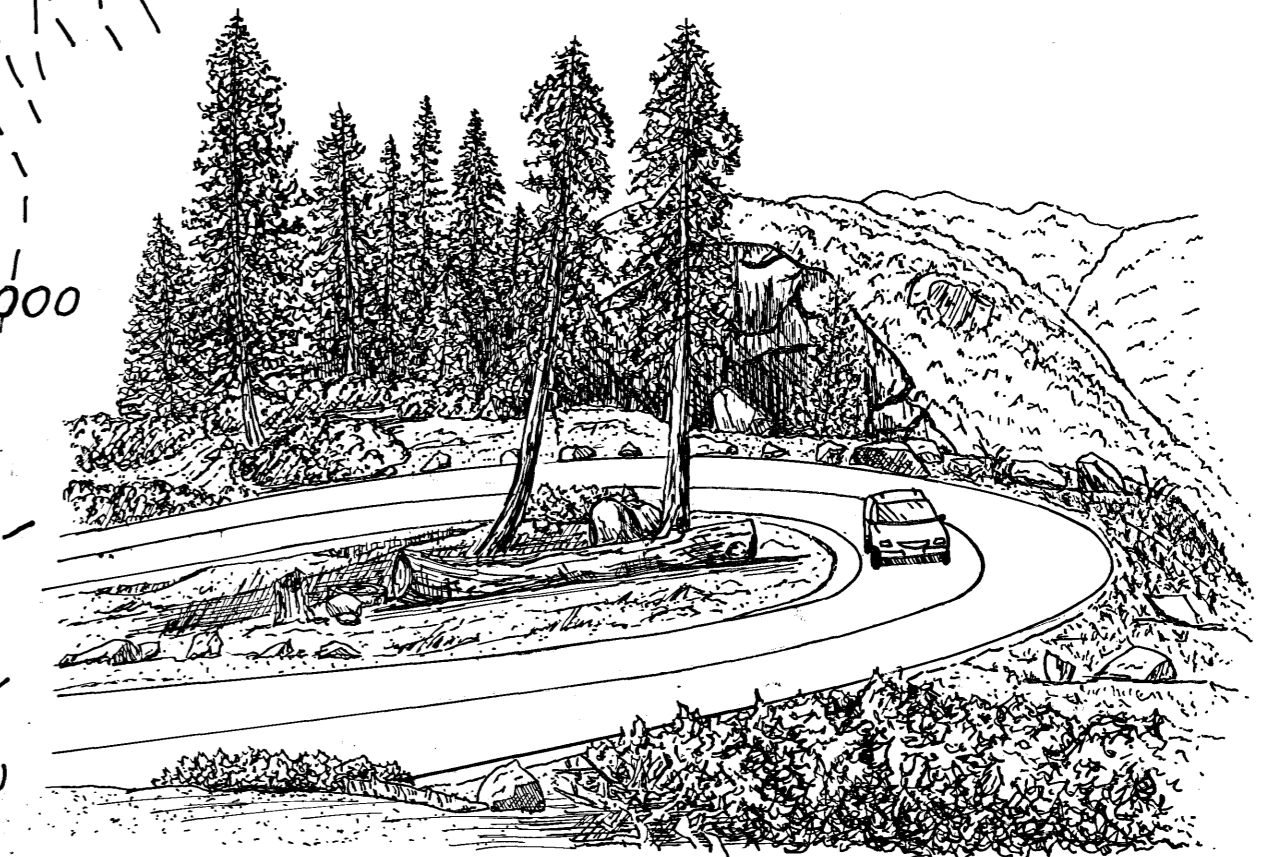
To Yosemite Valley



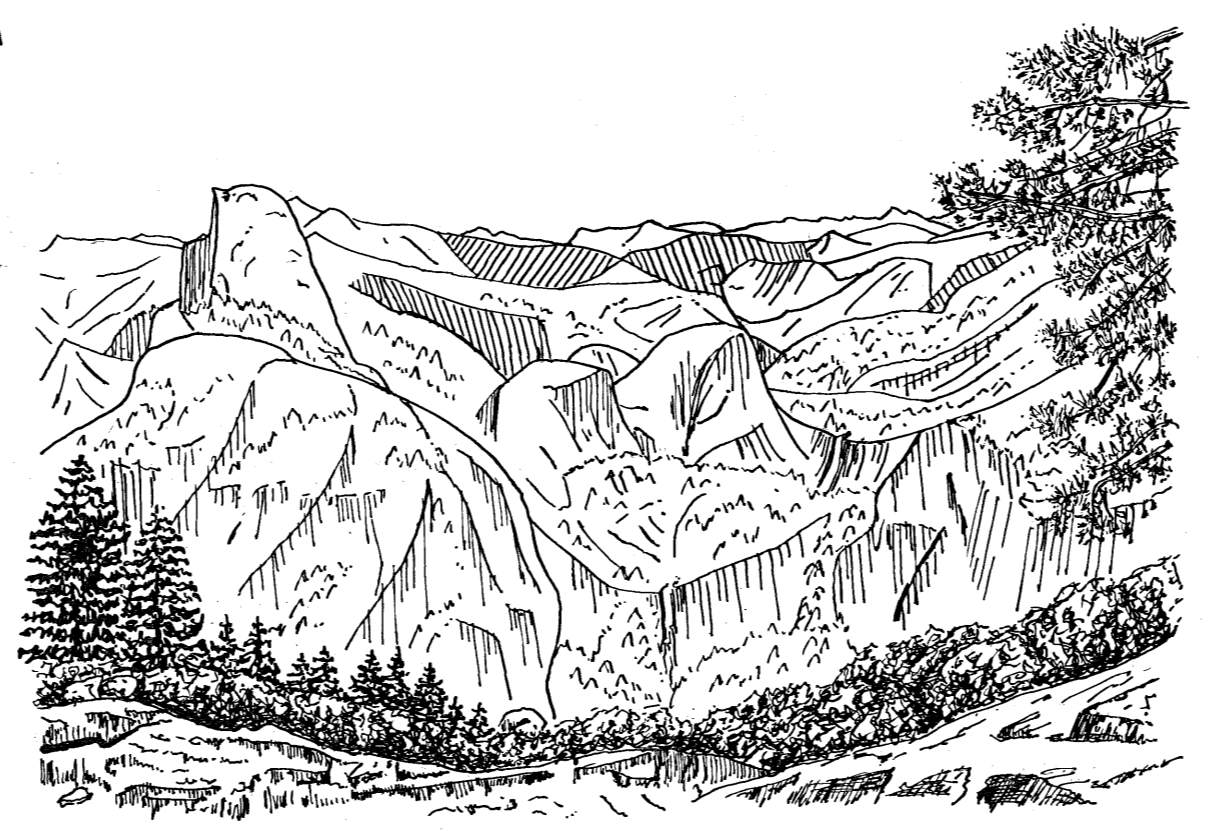
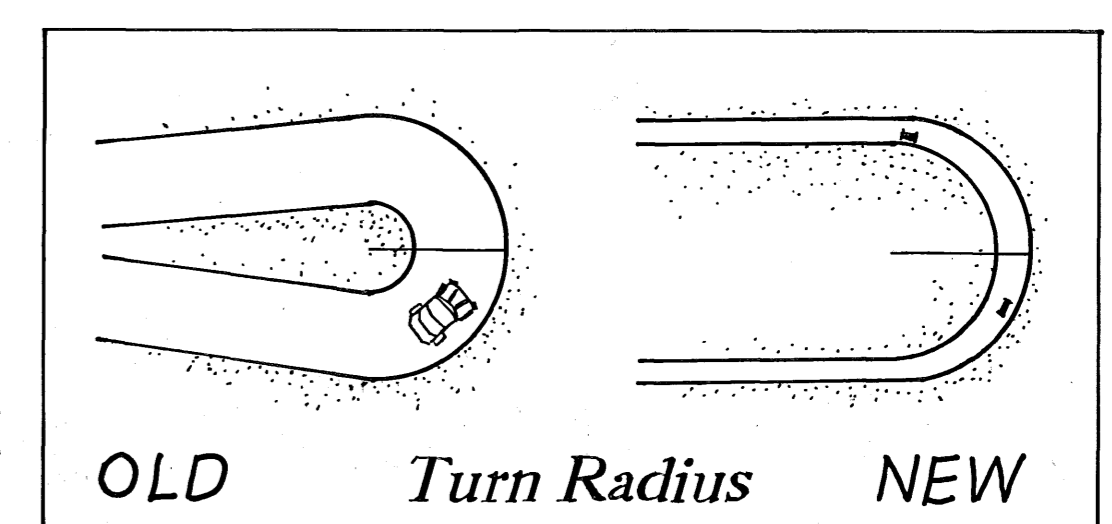
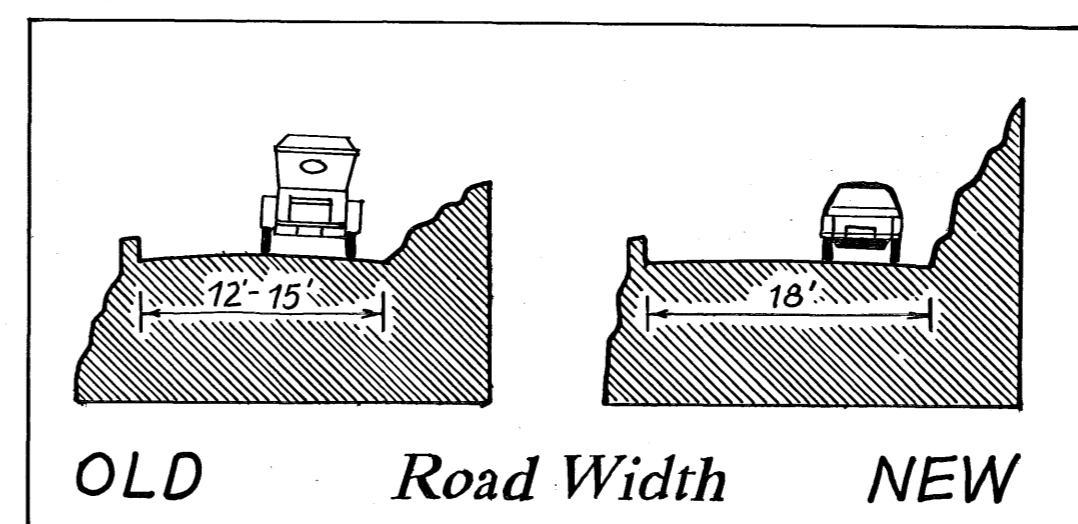
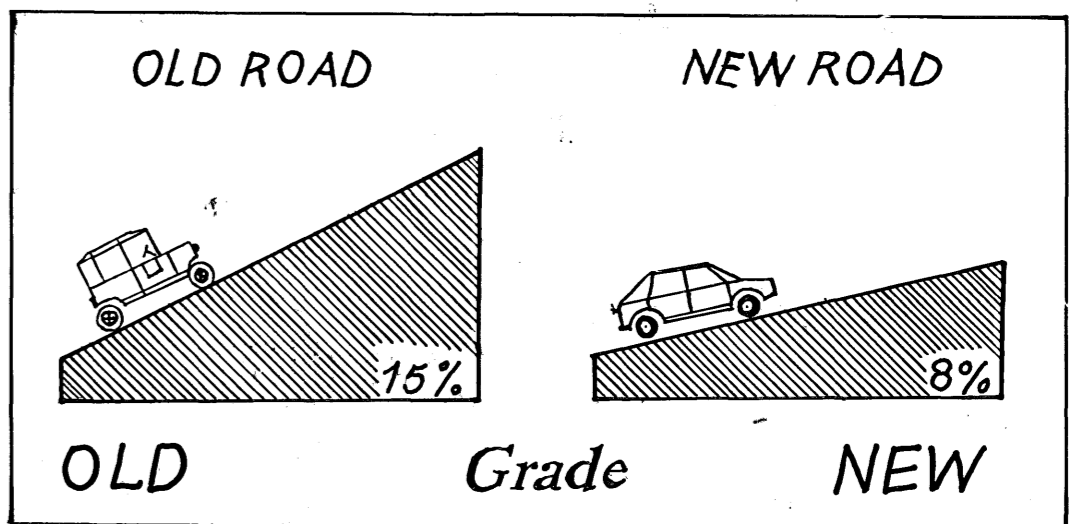
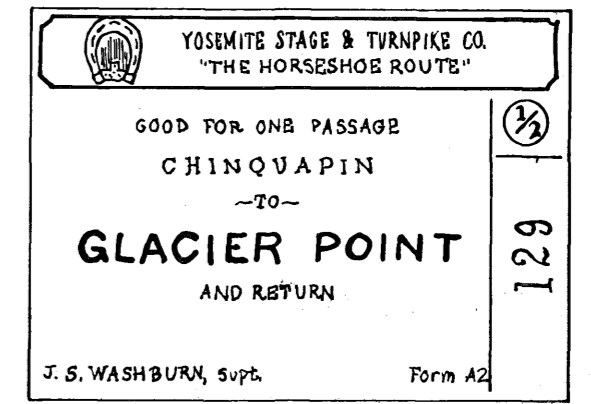
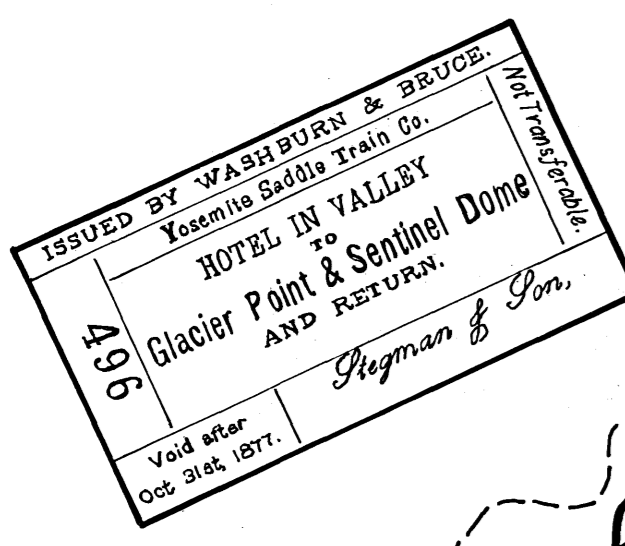
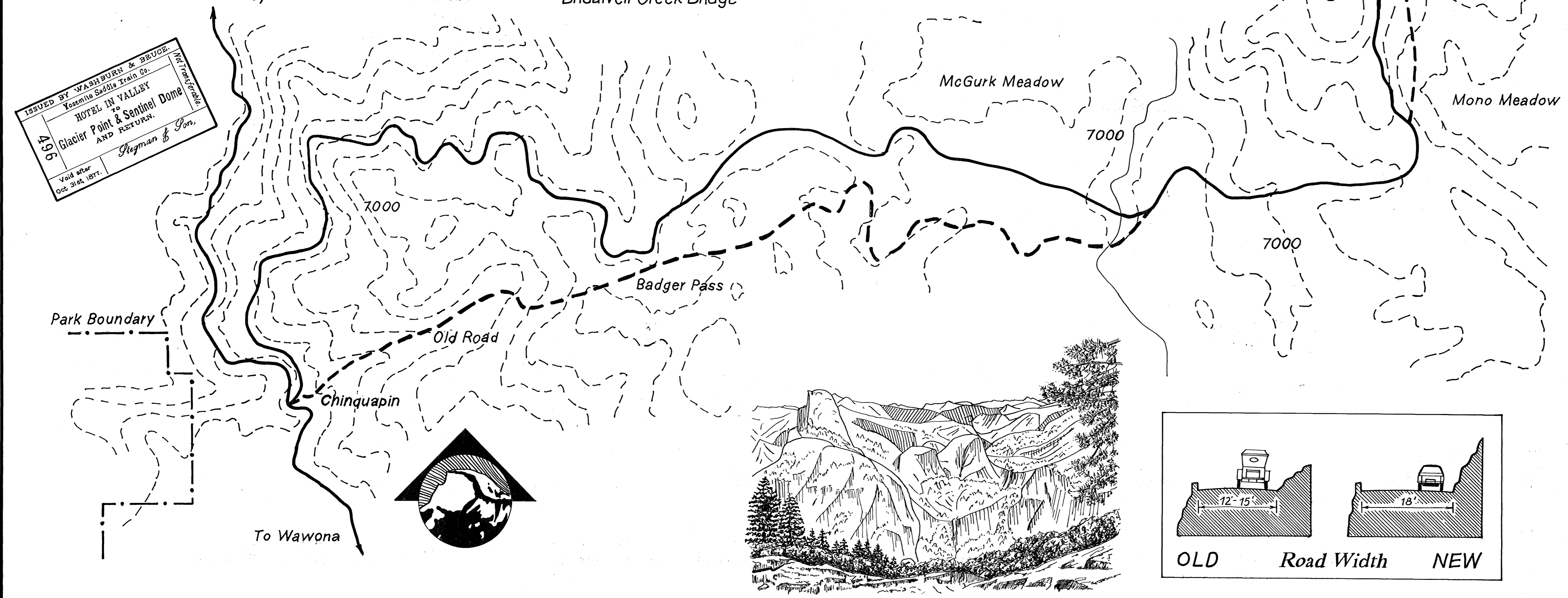
Bridalveil Creek Bridge



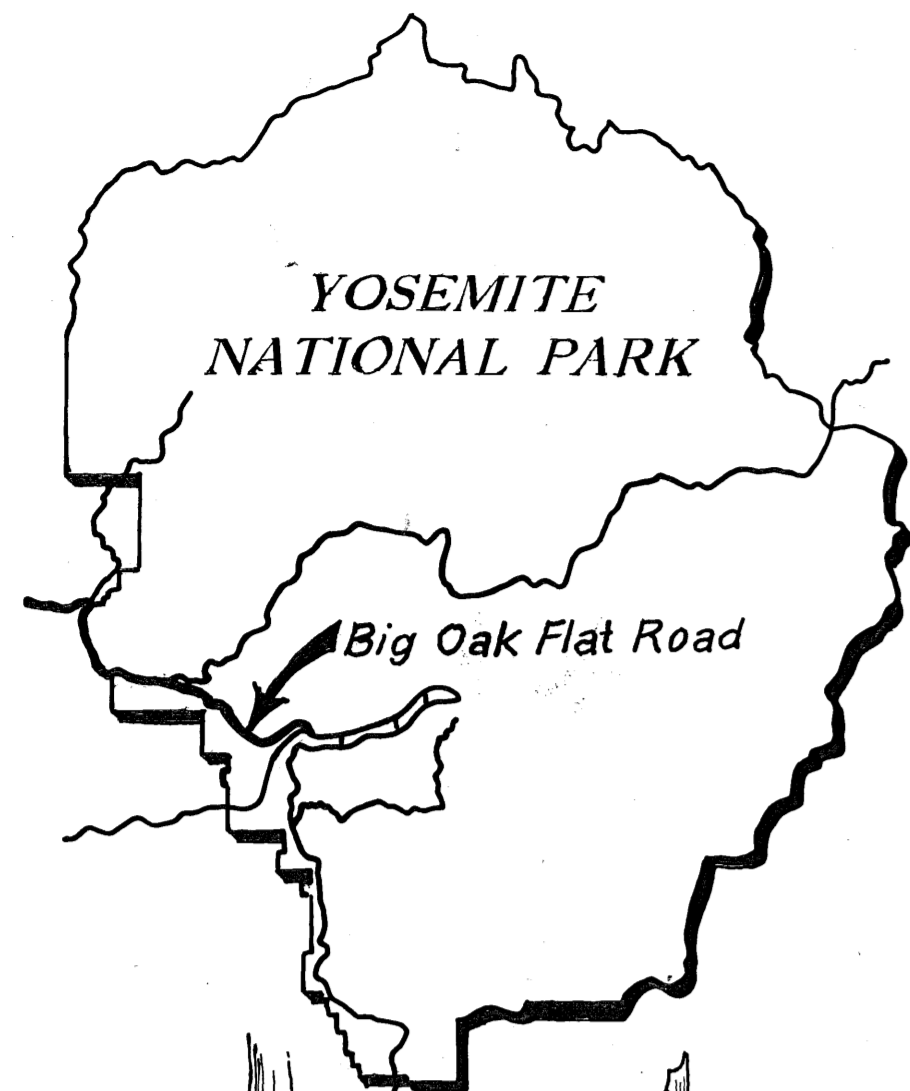
Illilouette ridge



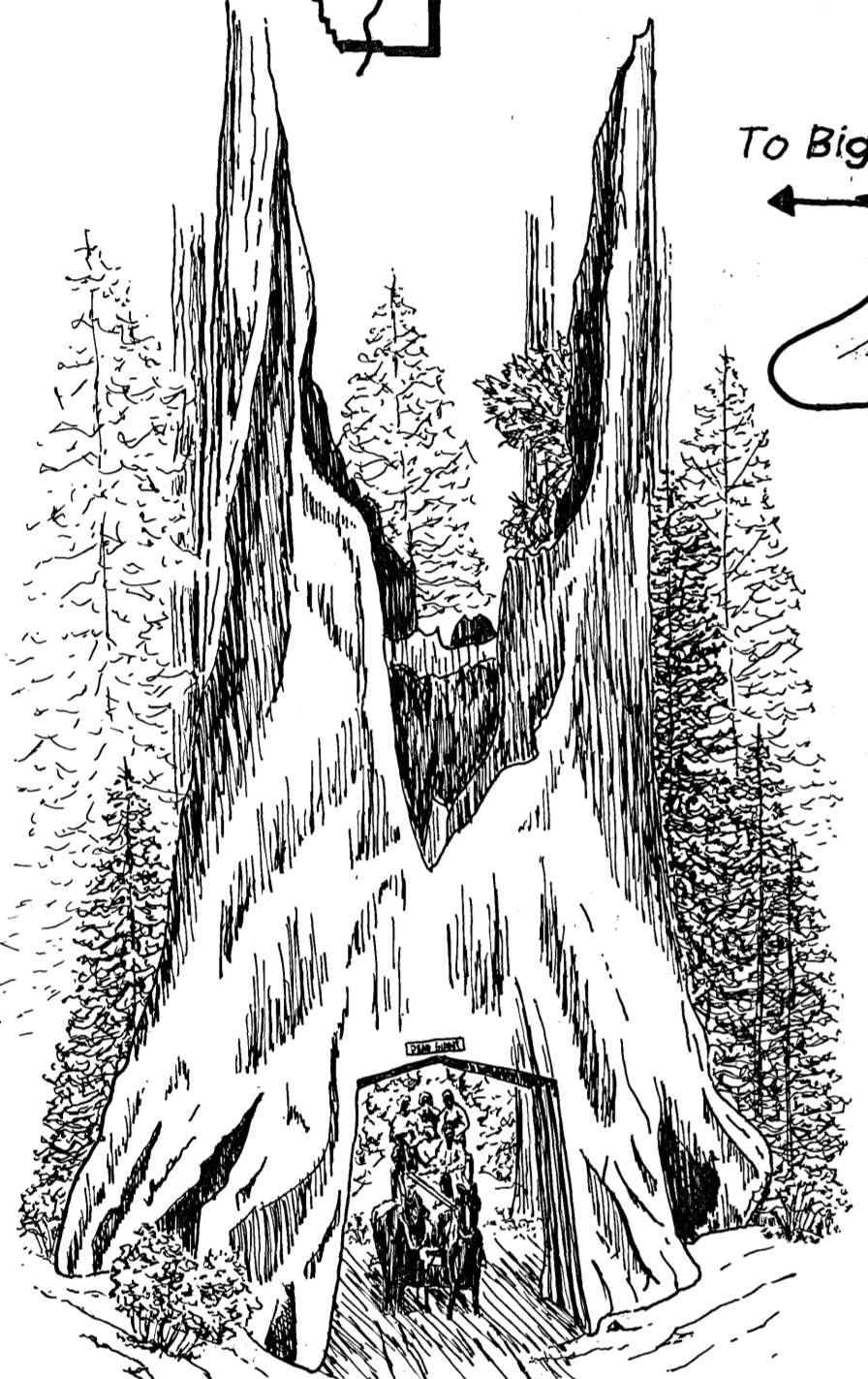
Switchbacks at Washburn Point



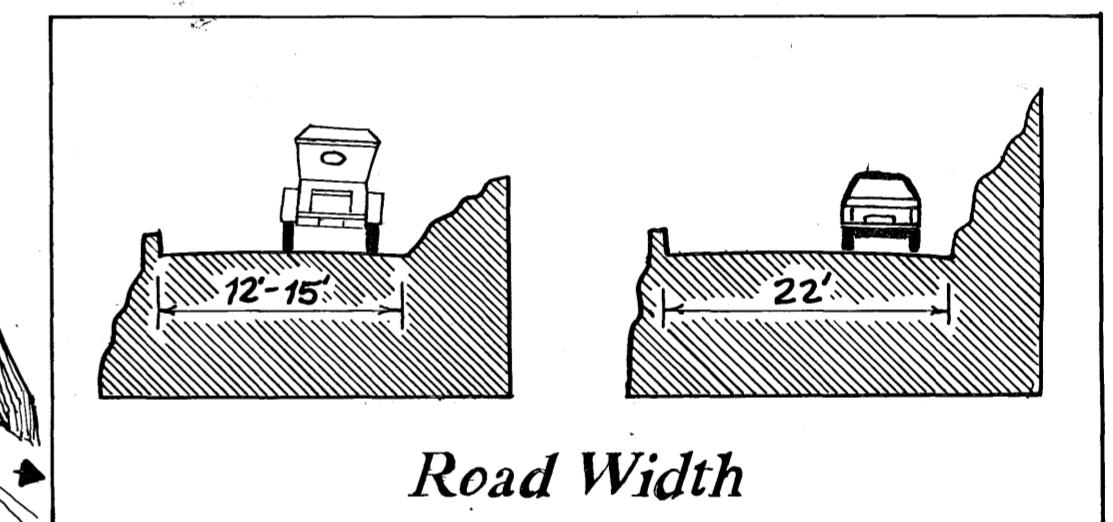
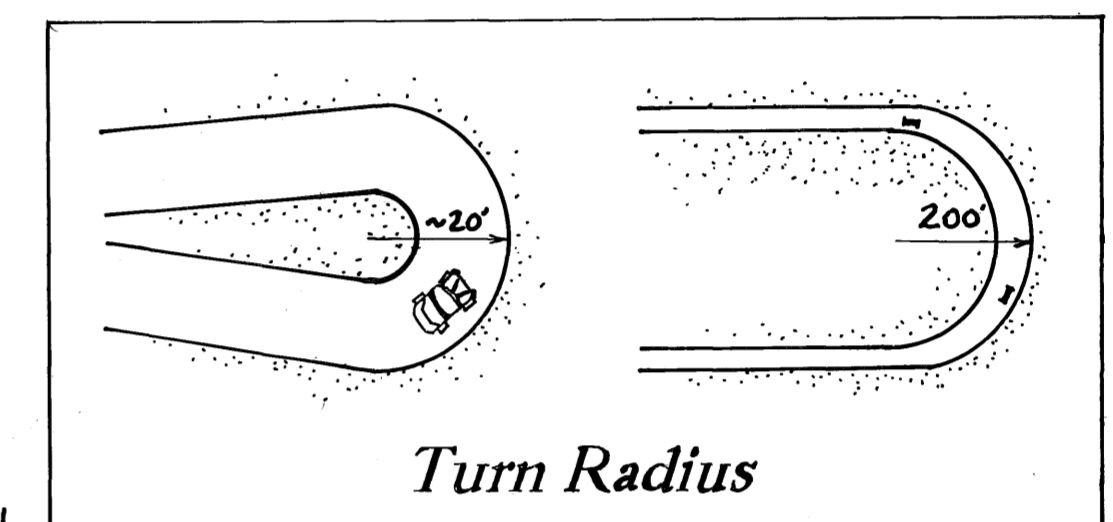
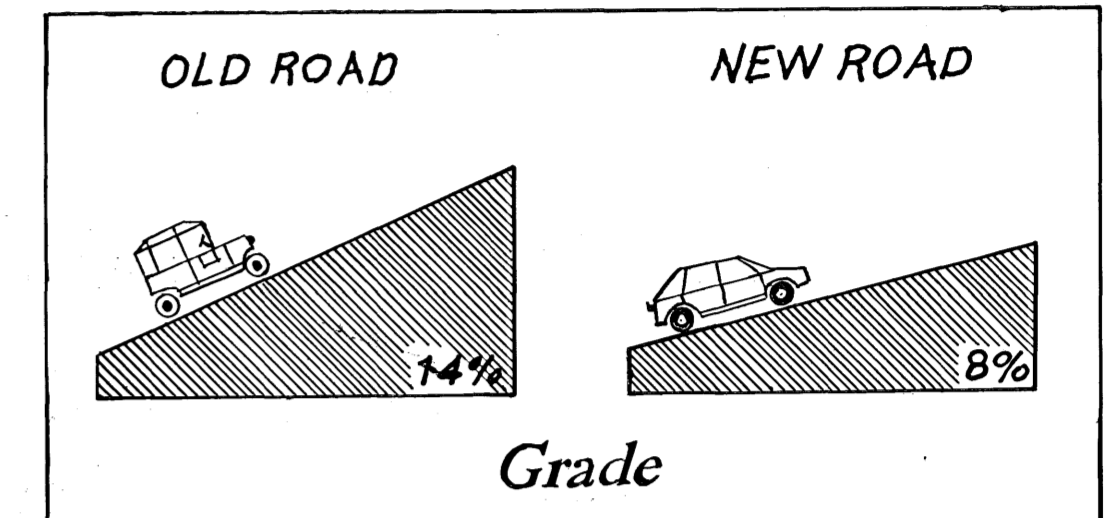
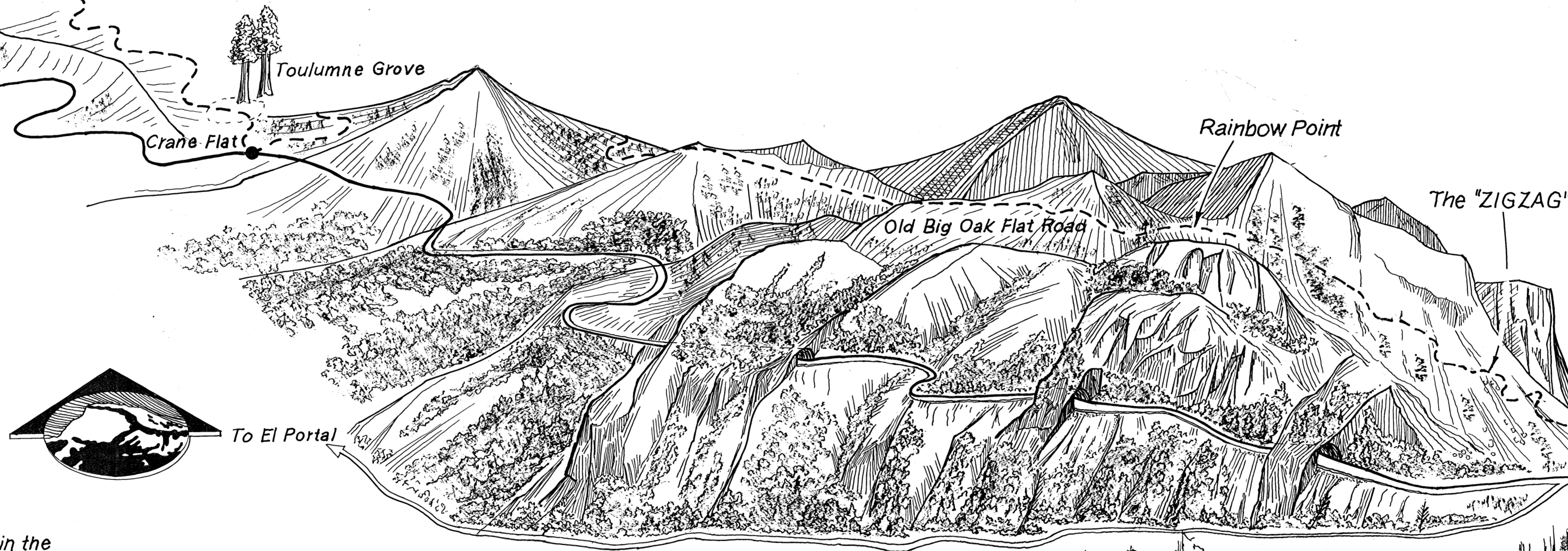
BIG OAK FLAT ROAD 1874/ 1940



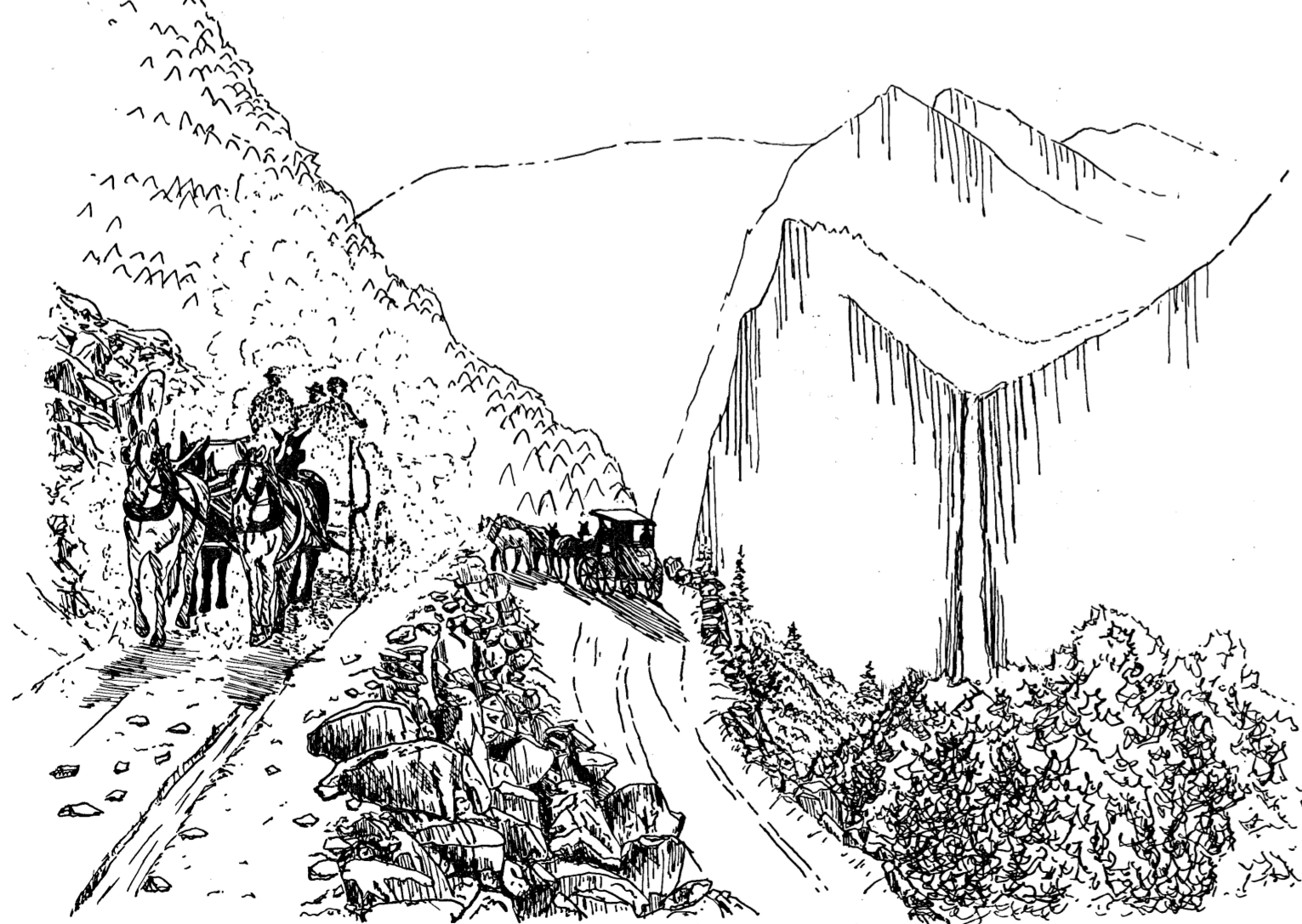
The "Chinese Camp & Yo Semite Turnpike" was constructed in the early 1870s as a toll route to the park from the northwest. After showcasing the Valley from Rainbow Point, it picked its way down the cliffs on a series of remarkable switchbacks called the "Zig Zag." To accommodate modern motorists, it was replaced by a new modern highway with easier grades in the 1930s. The New Big Oak Flat Road utilizes sweeping curves and three tunnels to eliminate the need for the earlier switchbacks.



To Big Oak Flat



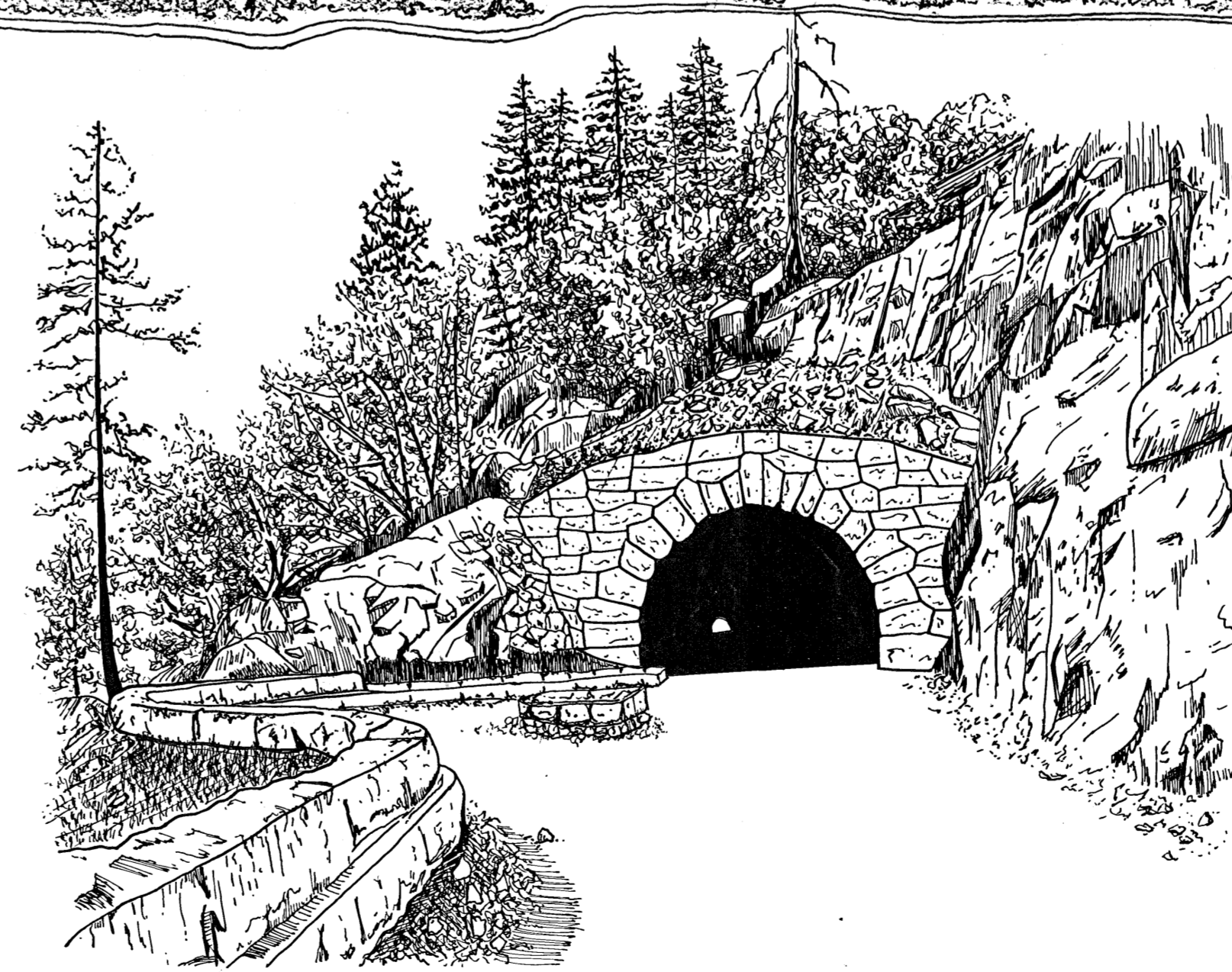
The tunnel through the Dead Giant in the Tuolumne Grove was cut in 1878 to entice Tourists to travel the Big Oak Flat Road.



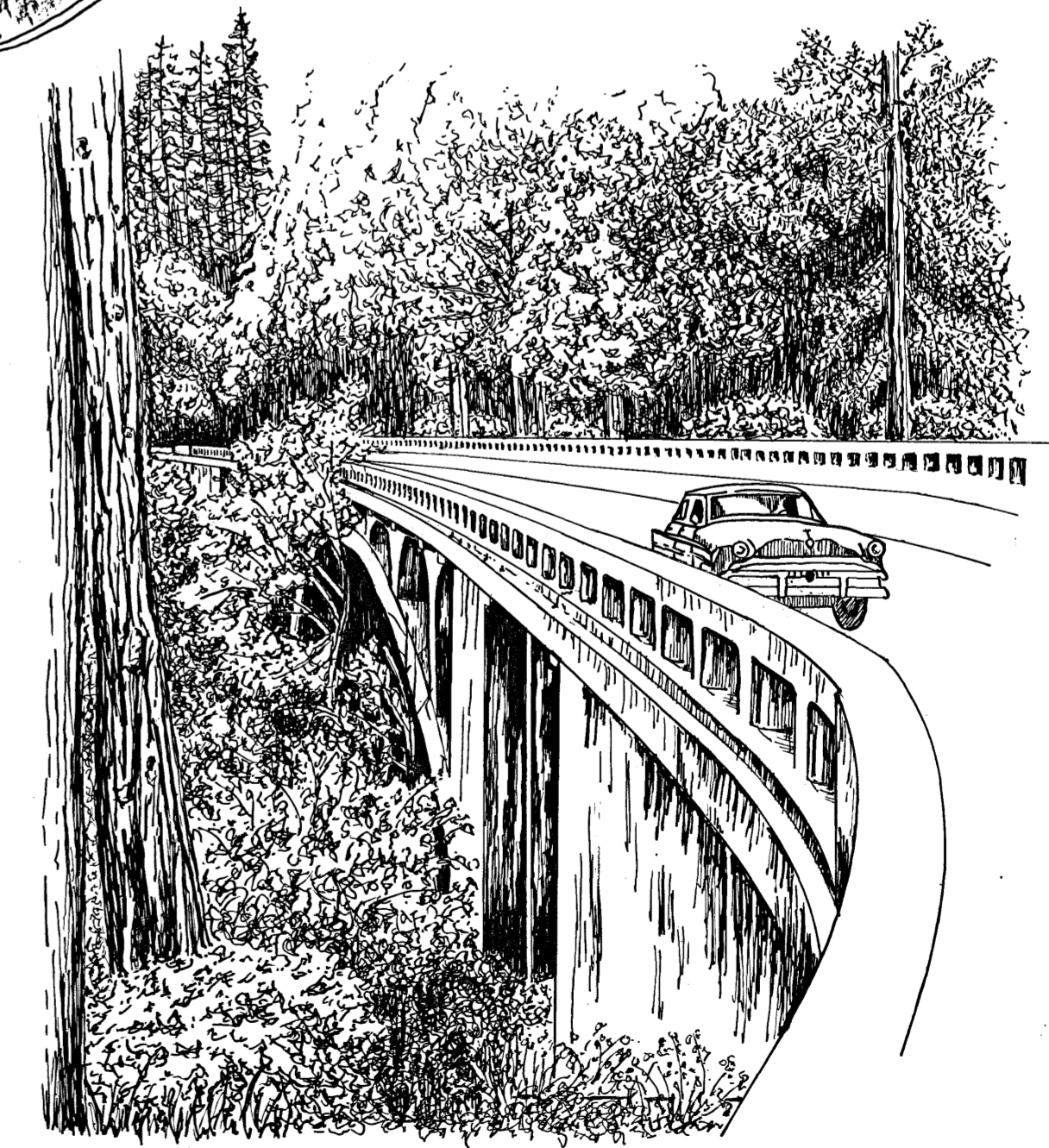
Horse stages ascend the "Zig Zag" Switchback on the Old Big Oak Flat Road.



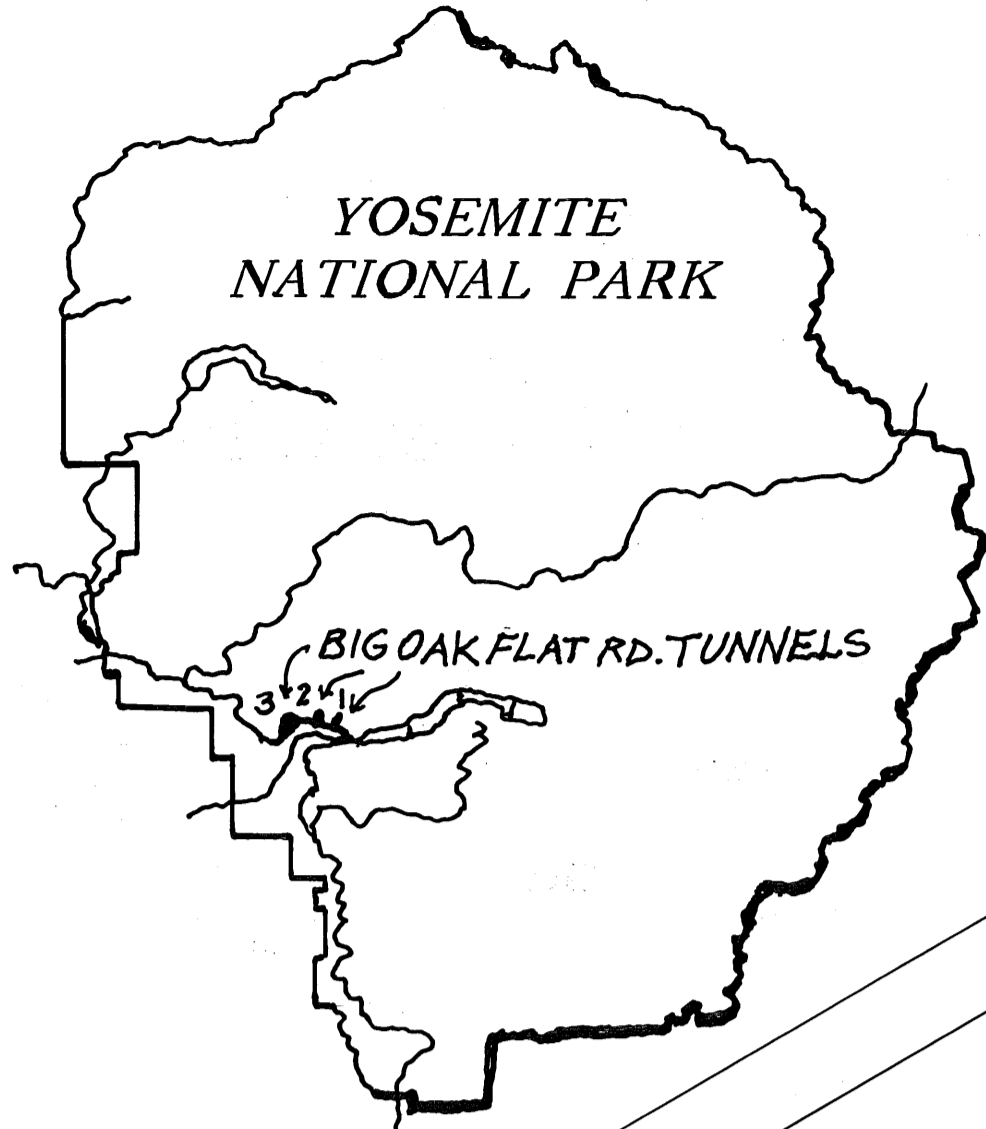
An early type motor bus descends the Old Big Oak Flat Road just above its junction with the Merced River.



Tunnel Construction on the Big Oak Flat road Allowed The Park Service to provide a steady grade, and minimize scarring.

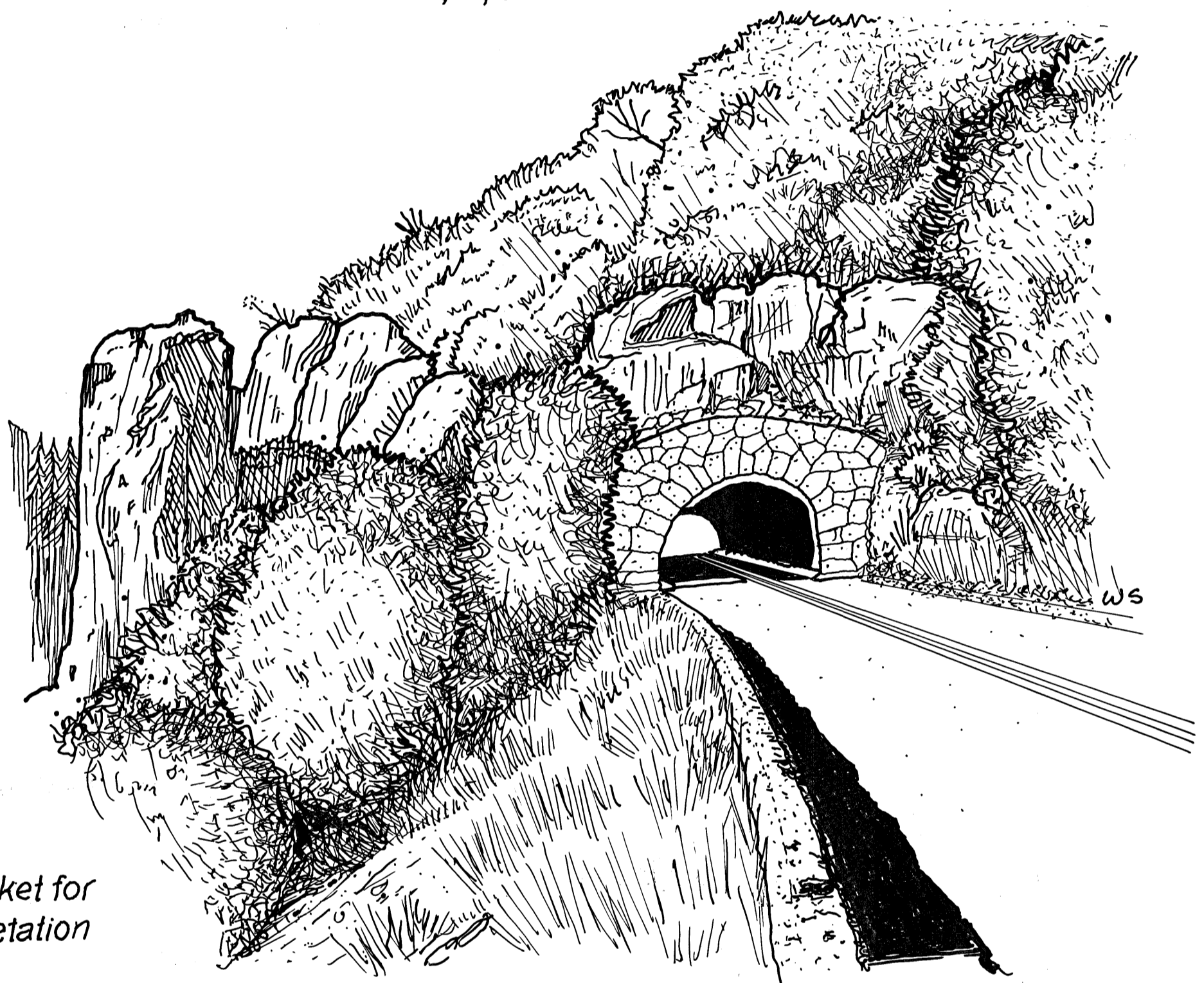
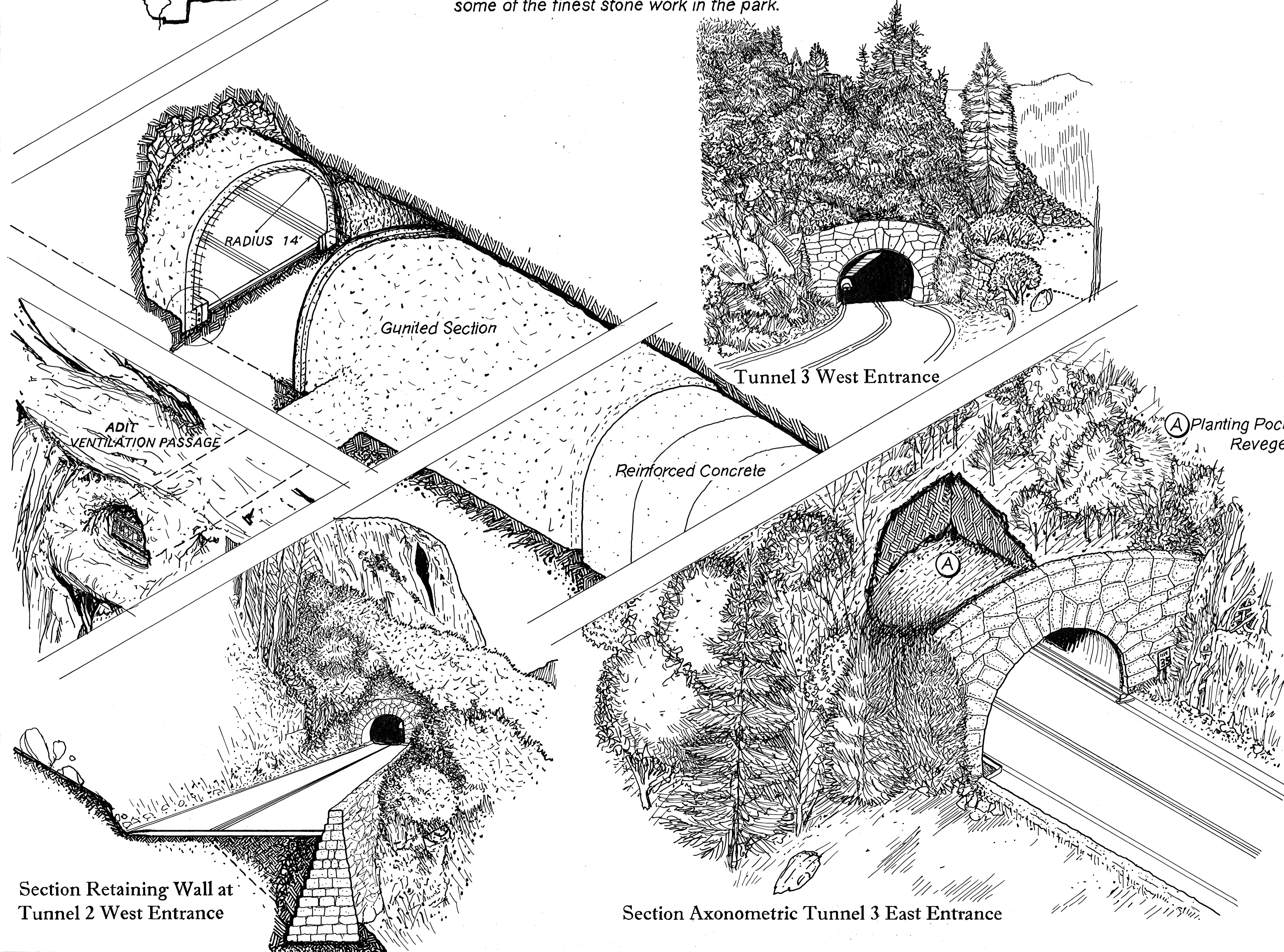
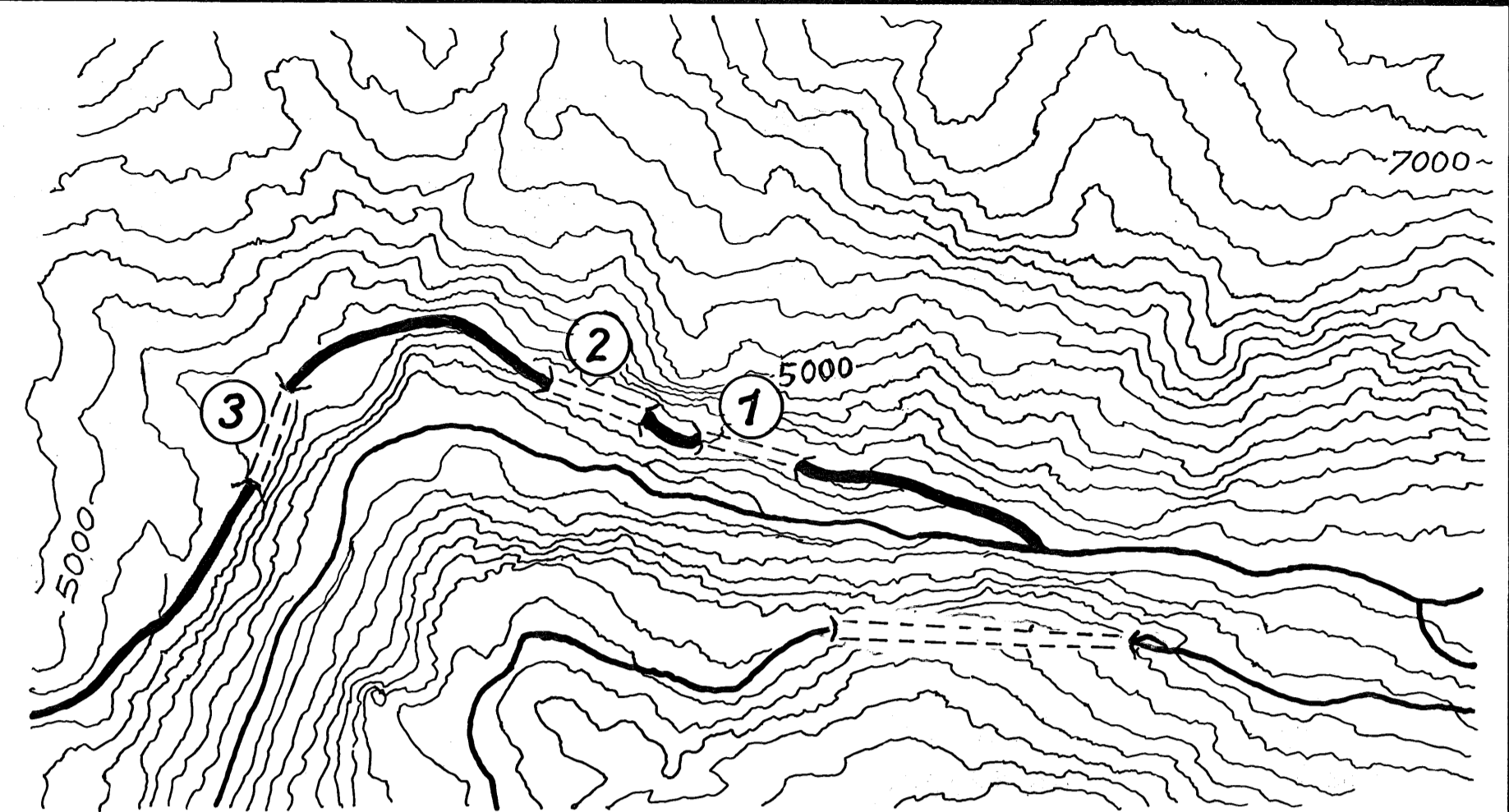


The streamlined bridges on the Big Oak Flat Road Eliminated the numerous switchbacks that were on The old road.

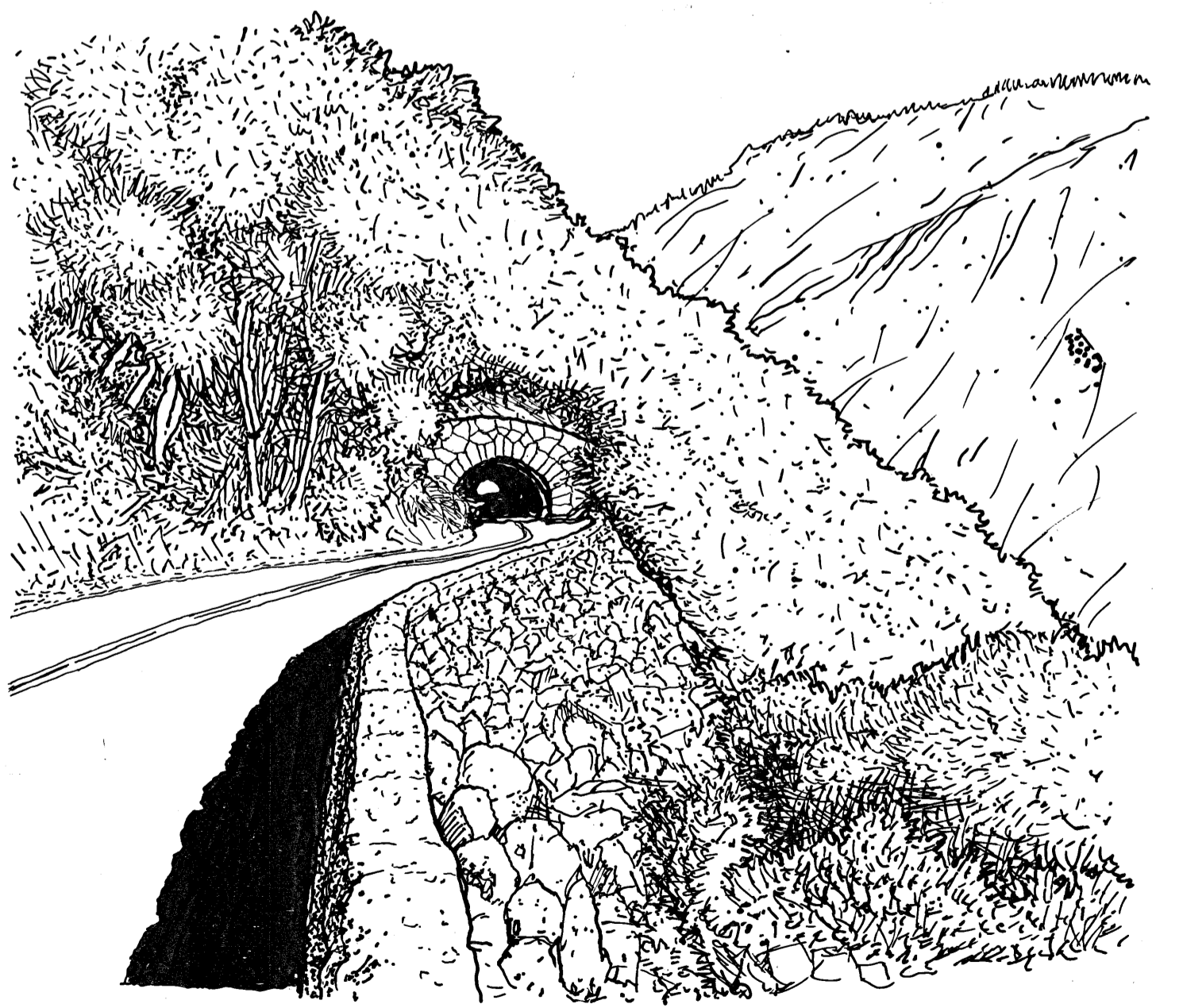


BIG OAK FLAT ROAD TUNNELS

In an effort to provide a steady grade and to minimize scarring of the granite cliffs, the reconstructed Big Oak Flat Road of the 1930s utilized three tunnels to carry the road through sheer cliffs. Traditional drilling and blasting methods were used for the two shorter tunnels. The 2,083' long tunnel was constructed using a "jumbo" with six separate drills; at the time, it was the longest tunnel built using this method. The tunnel portals by the Union Granite Company feature some of the finest stone work in the park.



Section Retaining Wall at Tunnel 2 West Entrance



DELINEATED BY: WALTON D. STONE, II, 2007

NPS ROADS & BRIDGES RECORDING PROGRAM

NATIONAL PARK SERVICE

UNITED STATES DEPARTMENT OF THE INTERIOR

YOSEMITE VICINITY

MARIPOSA & TUOLUMNE COUNTIES

ADDENDUM: YOSEMITE NATIONAL PARK ROADS & BRIDGES

CALIFORNIA

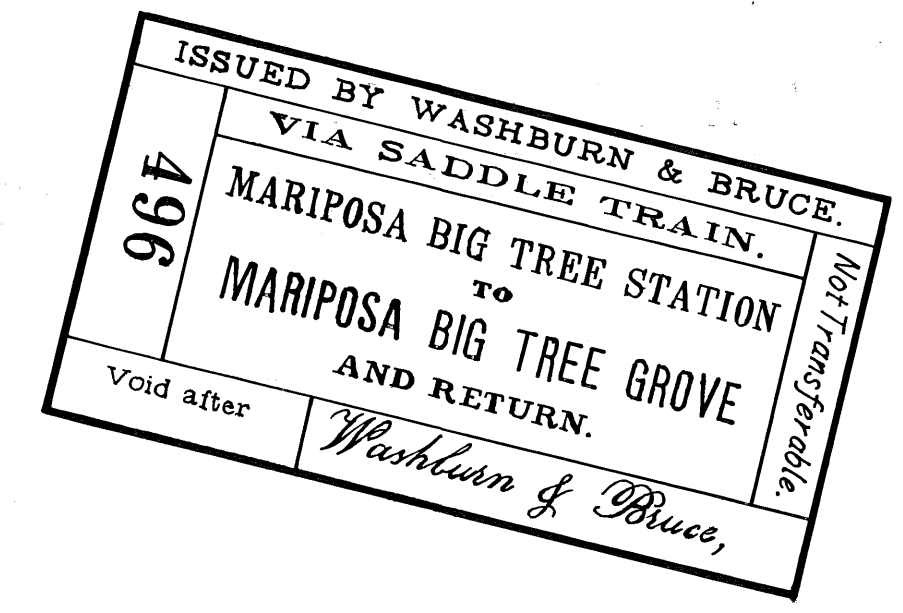
SHEET 7 OF 19

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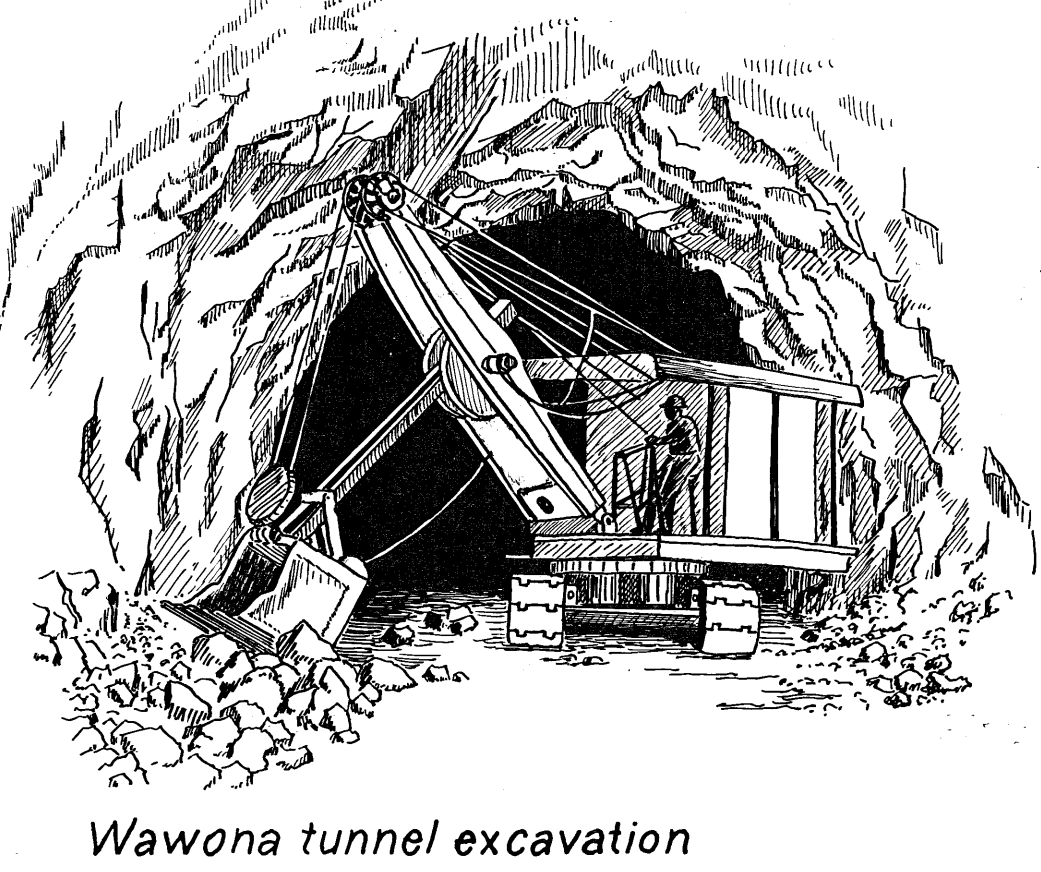
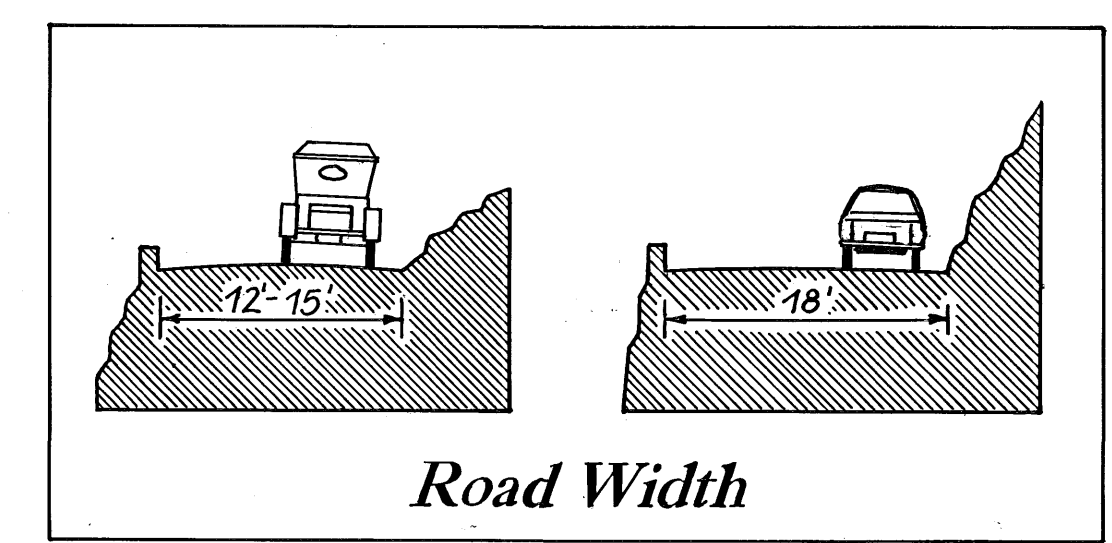
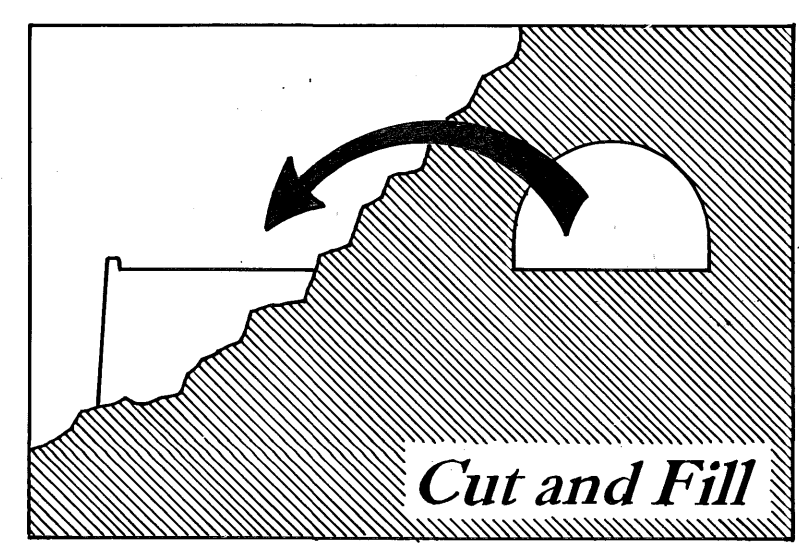
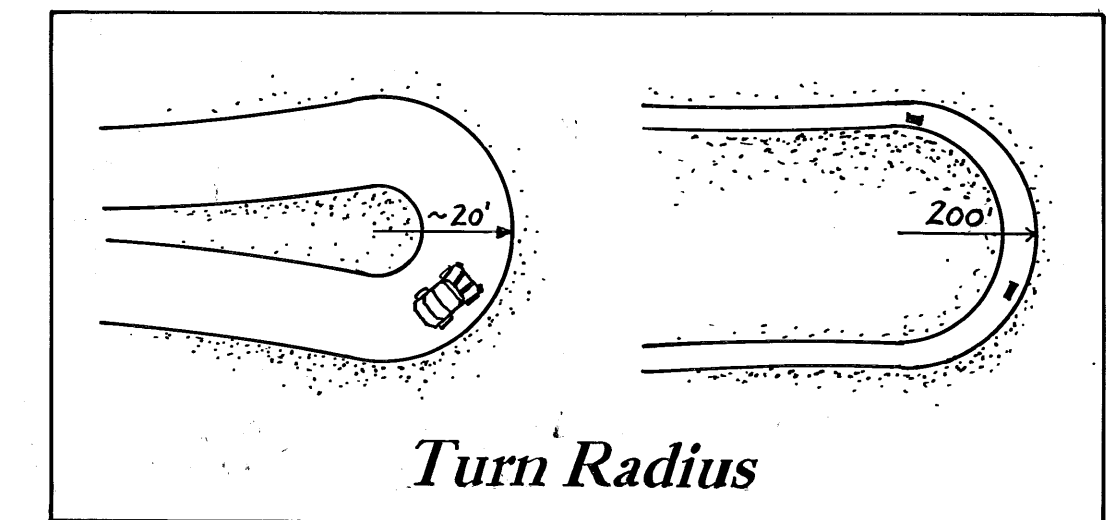
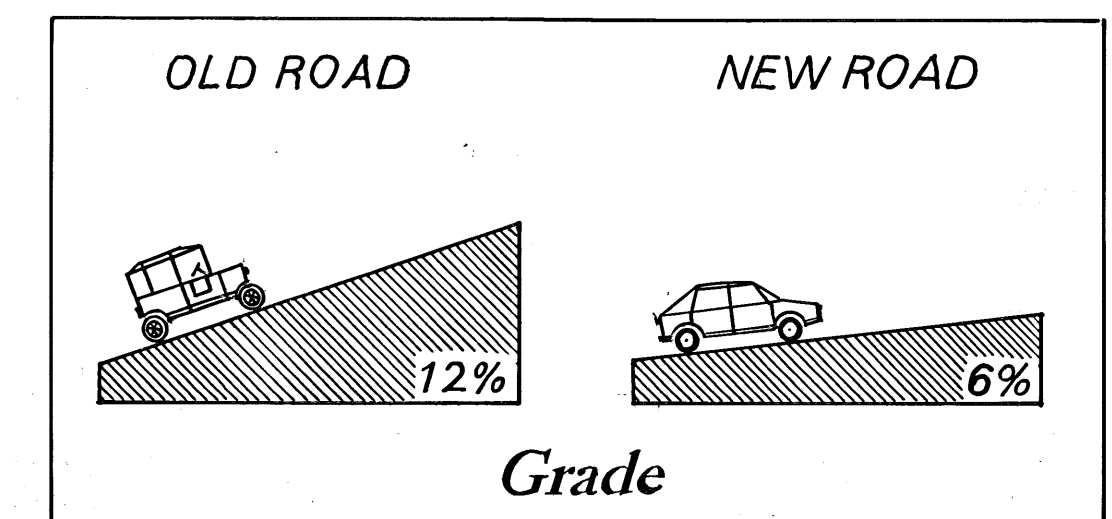
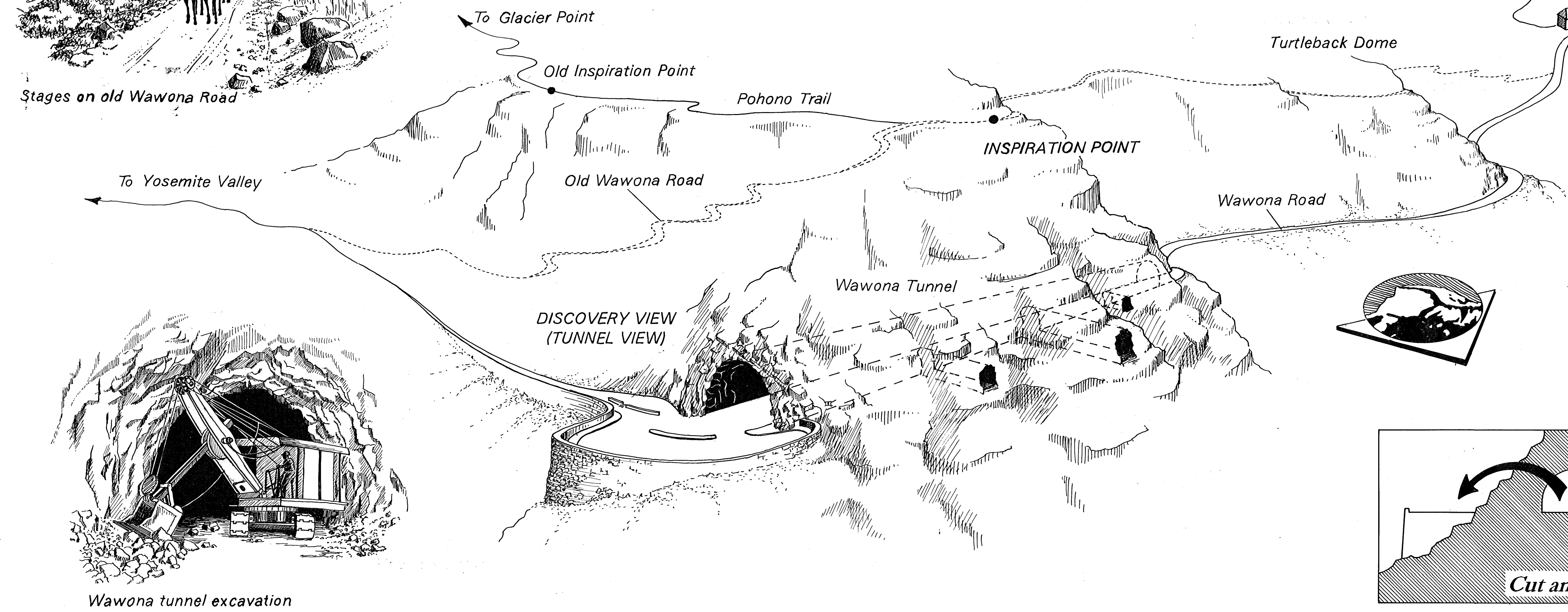
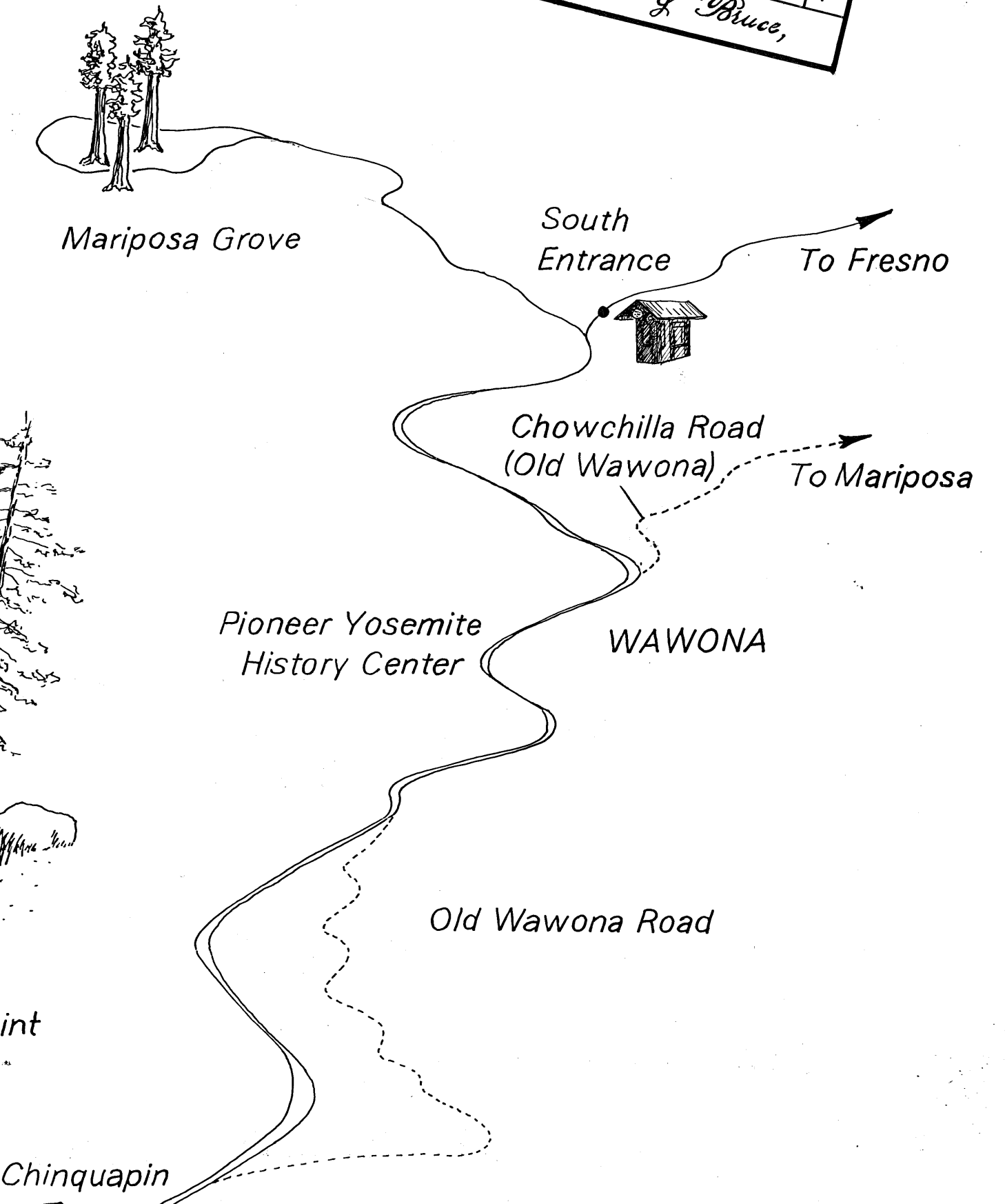
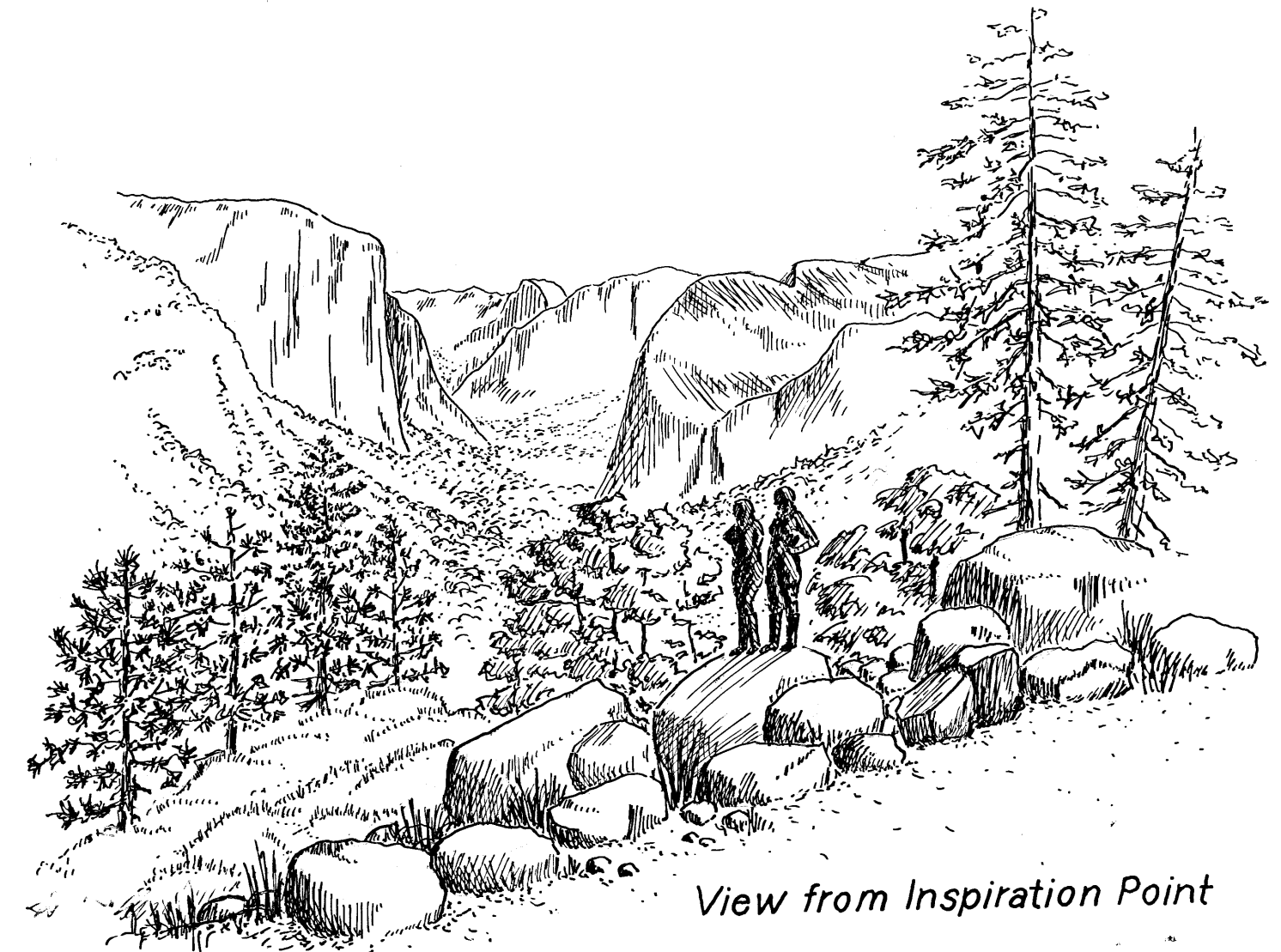
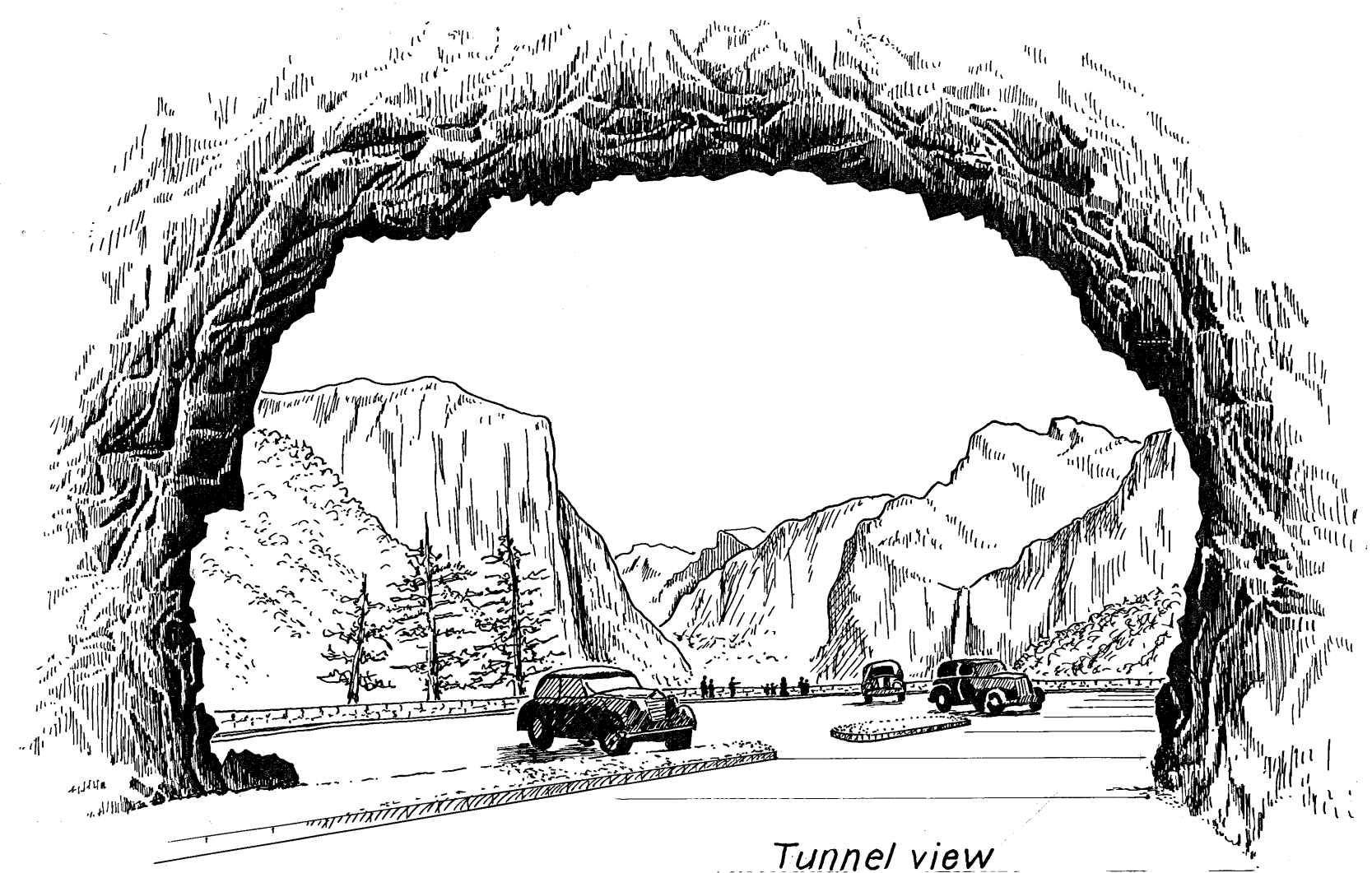
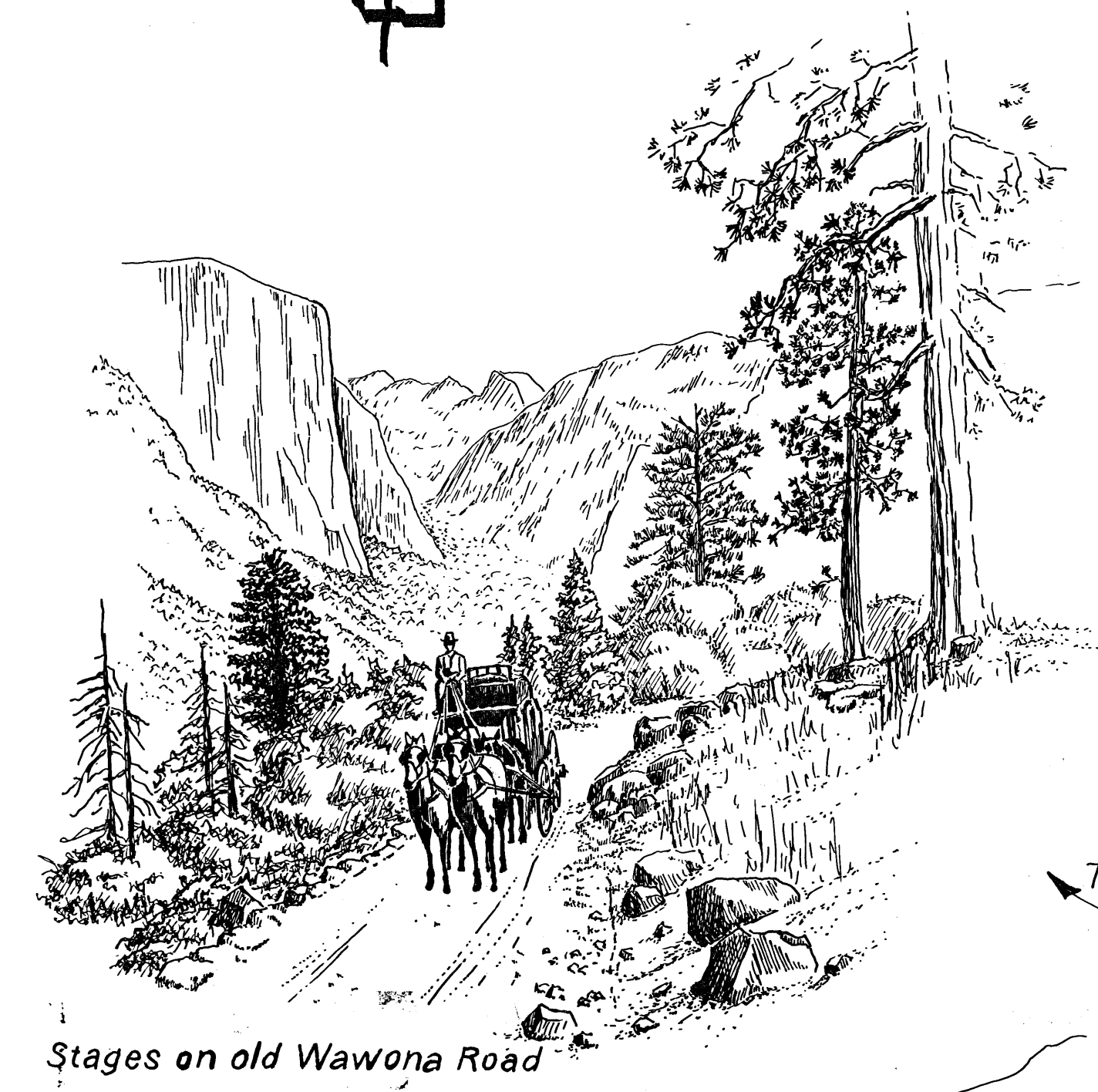
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WAWONA ROAD 1875/1933



The most successful of the early toll roads, the "Mariposa Big Trees and Yo Semite Turnpike" was started in the 1860s by Yosemite guardian Galen Clark but was taken over by Mariposa County investors in the 1870s. Reaching the Valley floor in 1875, it was the most popular route to the park for decades. Reconstructed by the National Park Service in the 1930s, it remains the principal approach to the park from the south. After passing through forests most of the way, travelers emerge through the Wawona Tunnel to one of the most exciting views of Yosemite Valley.



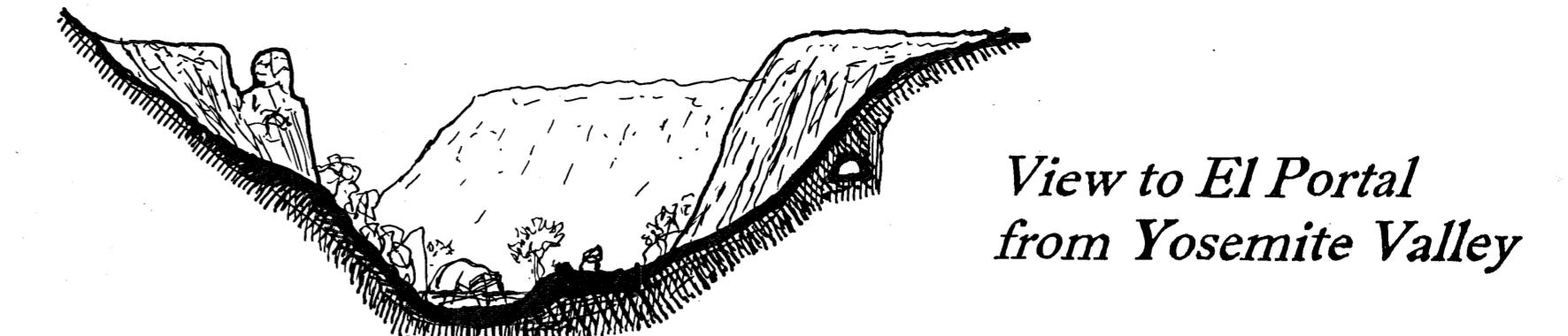
DELINEATED BY: Anne Teresiak 2001
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 CA-117

TRIM LINE

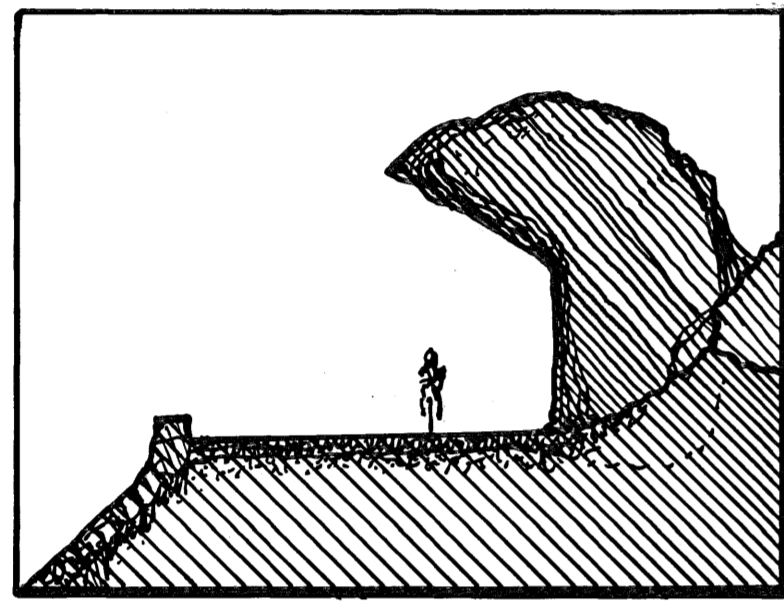
TRIM LINE

EL PORTAL ROAD

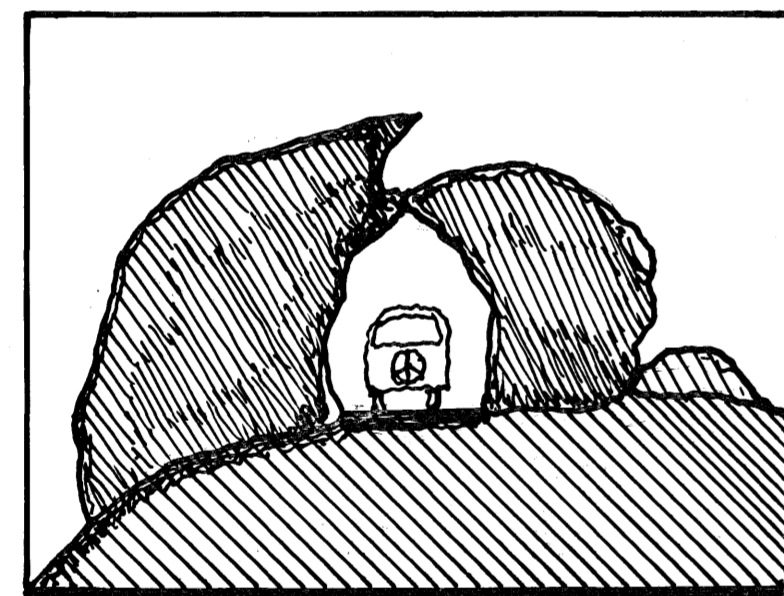
"The All-Year Highway"



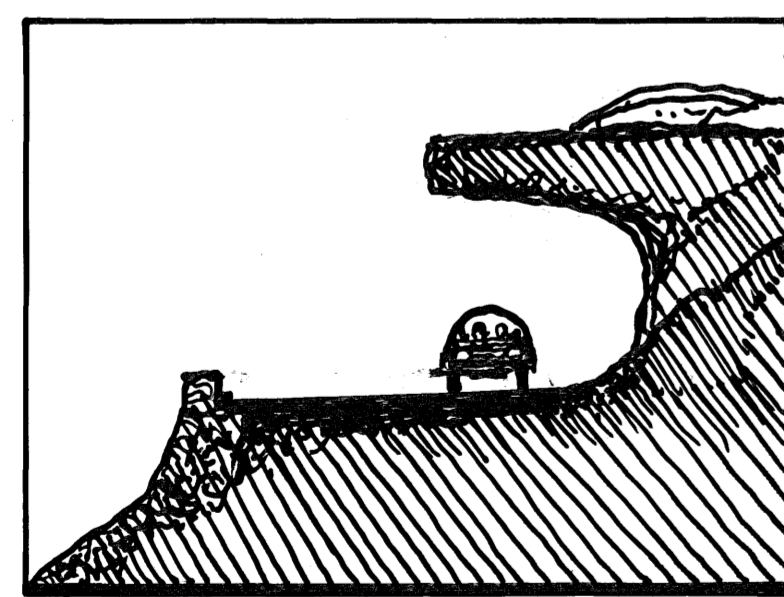
Long thought impassible, the steep and flood-prone Merced River Valley was first conquered by the Yosemite Valley Rail Road, which built a line to El Portal and a connecting road to the Valley in 1908. In the 1930s, the State of California, looking to provide reliable year-round access to the park, built a modern highway to El Portal, and the National Park Service reconstructed the old wagon road into the Valley. Following disastrous floods of the Merced, the road has been realigned and heavily reconstructed.



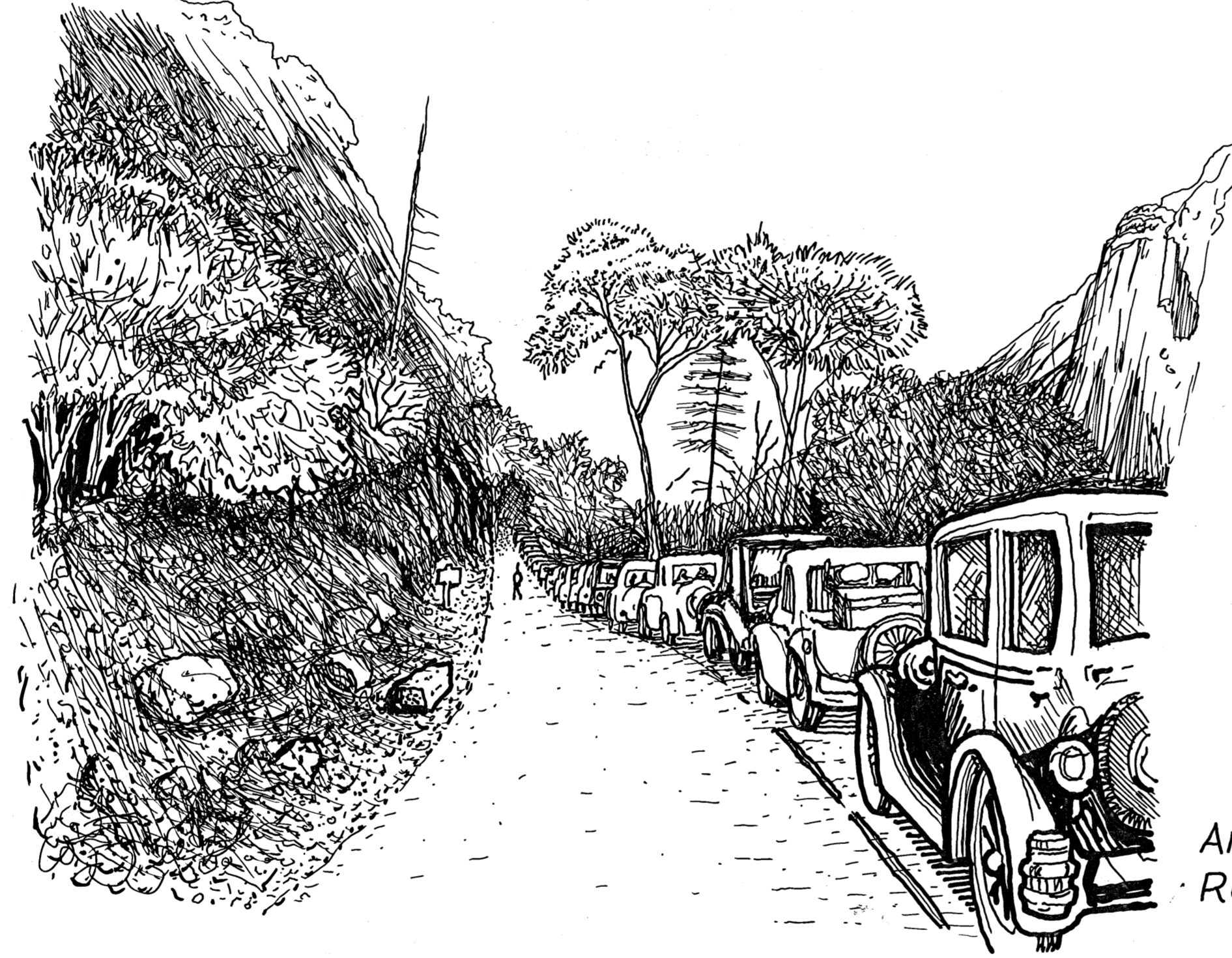
Half-Arch Rock



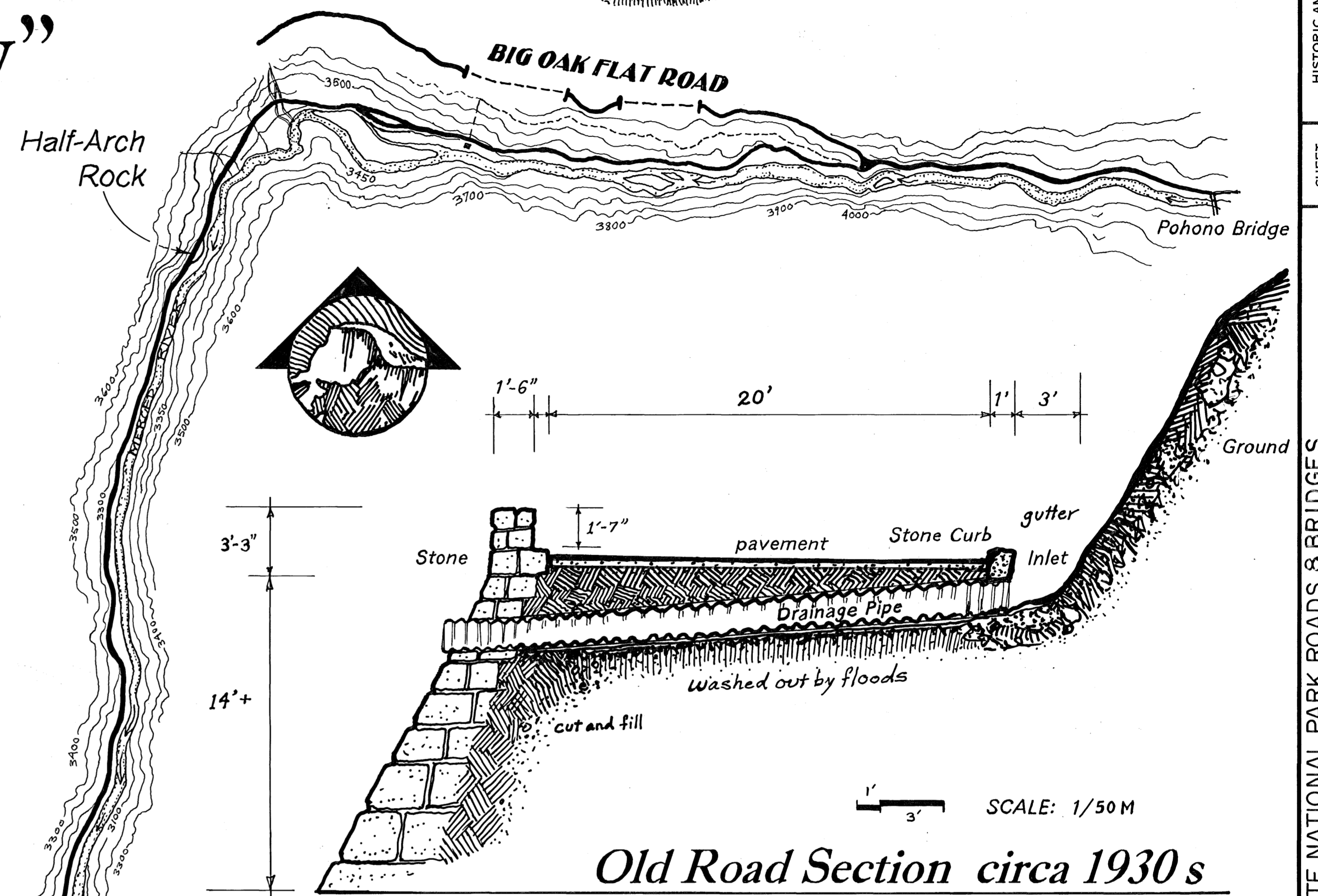
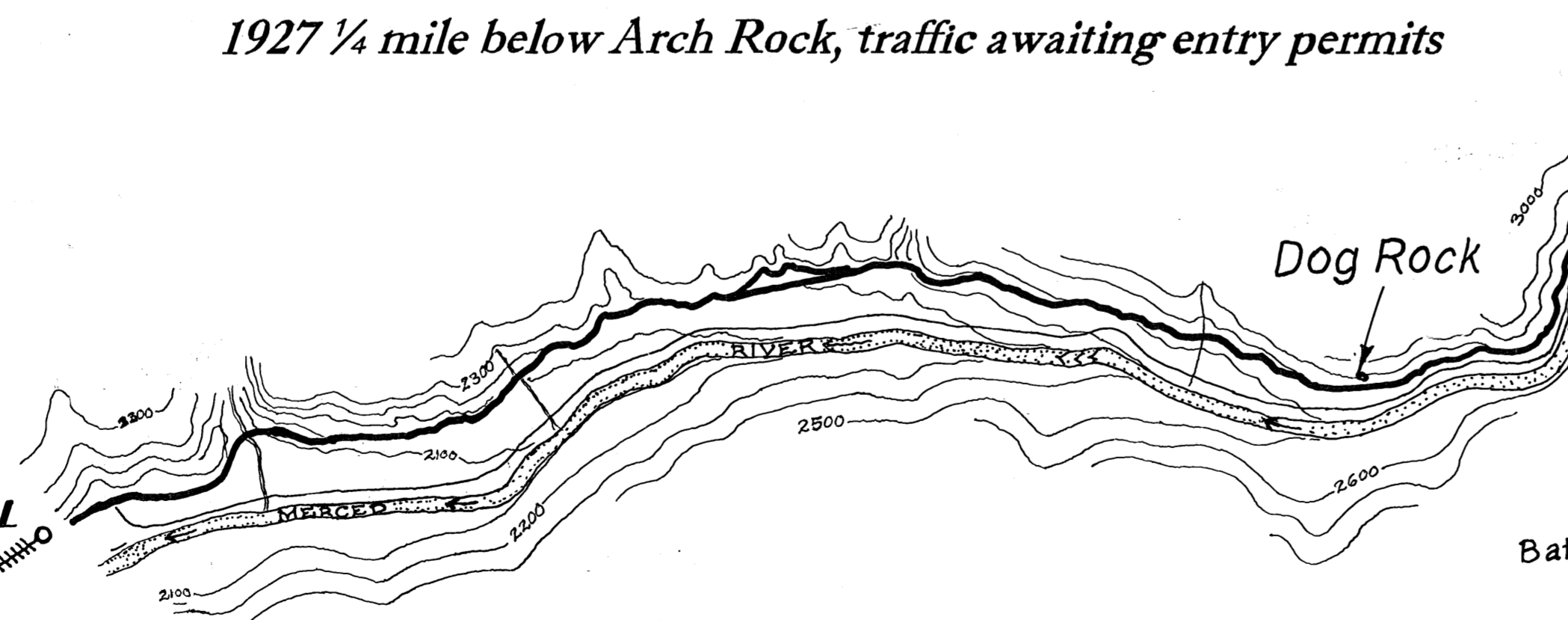
Arch Rock



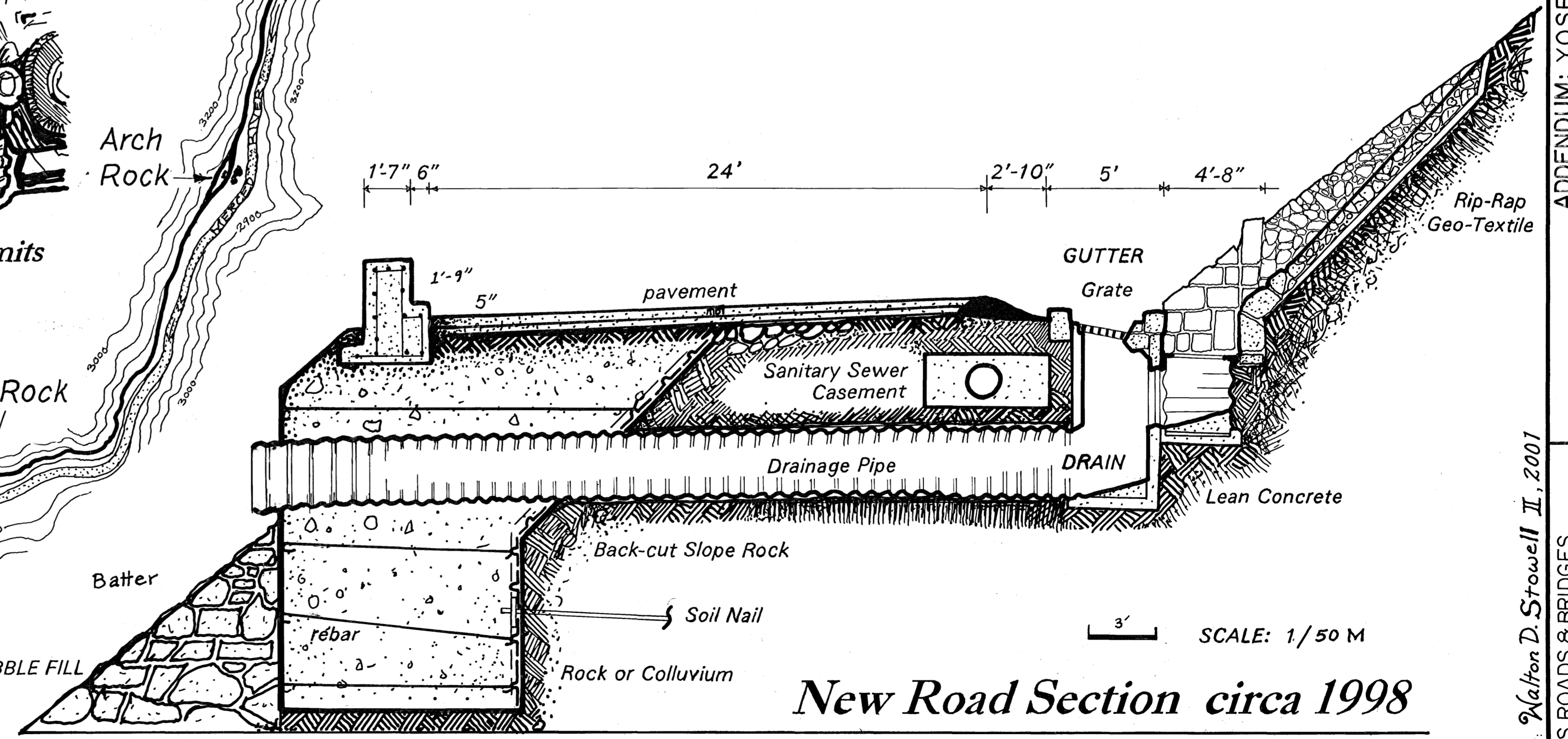
Dog Rock



1927 ¼ mile below Arch Rock, traffic awaiting entry permits



Old Road Section circa 1930s



New Road Section circa 1998

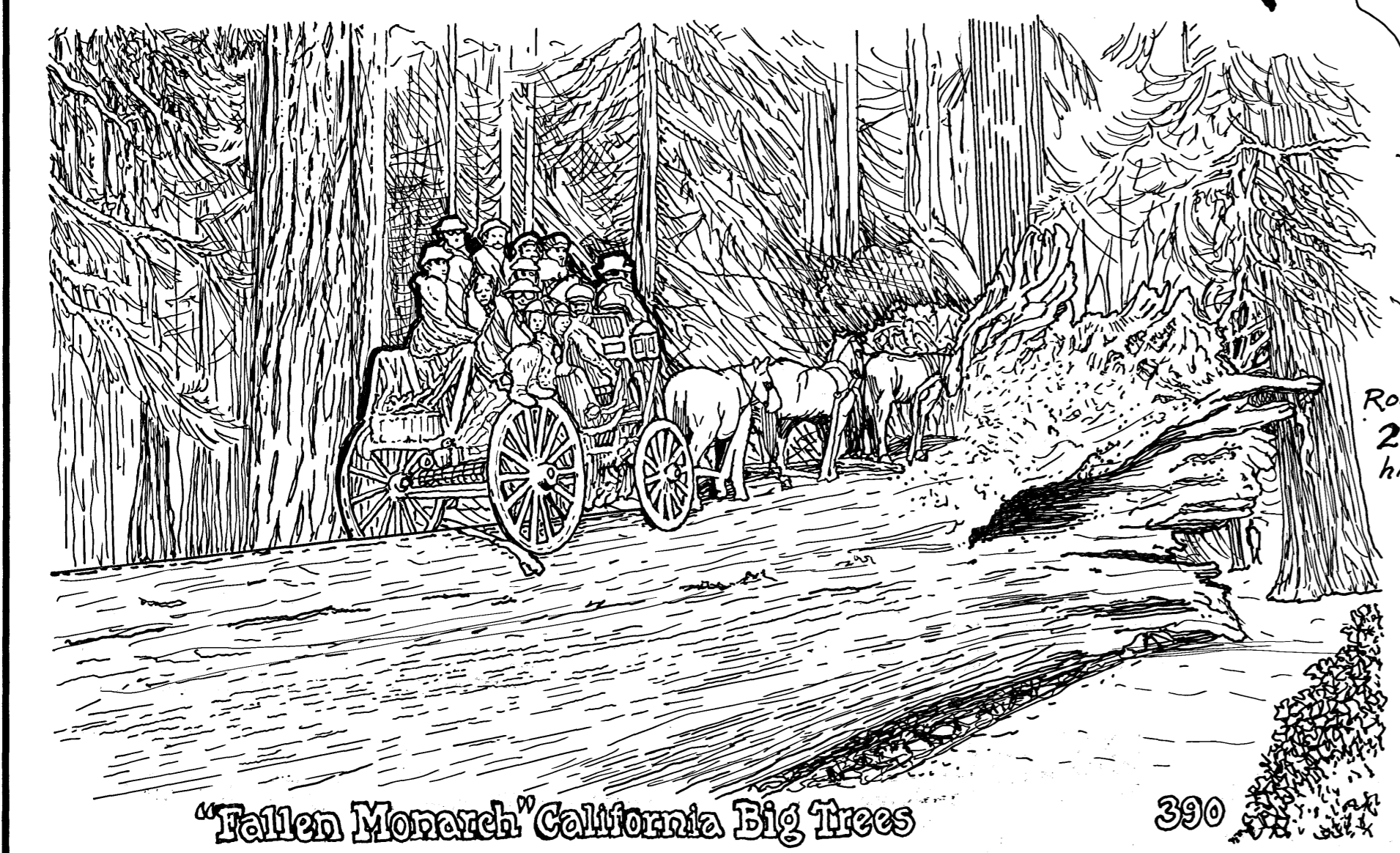
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YOSEMITE VICINITY
DELINEATED BY: Walton D. Stowell II, 2007
NPS ROADS & BRIDGES RECORDING PROGRAM
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CALIFORNIA CA-117

MARIPOSA GROVE ROADS

In 1878, the Yosemite Board of Commissioners authorized the proprietors of the Wawona Road to construct a spur road to the Mariposa Big Tree Grove containing the largest giant sequoias in the park. The two-mile road was completed the following year at a cost of \$1,620. While the road once continued in amidst the giant trees, today it terminates in a parking area where visitors may continue on foot or gaze upward at the trees from motorized trams.

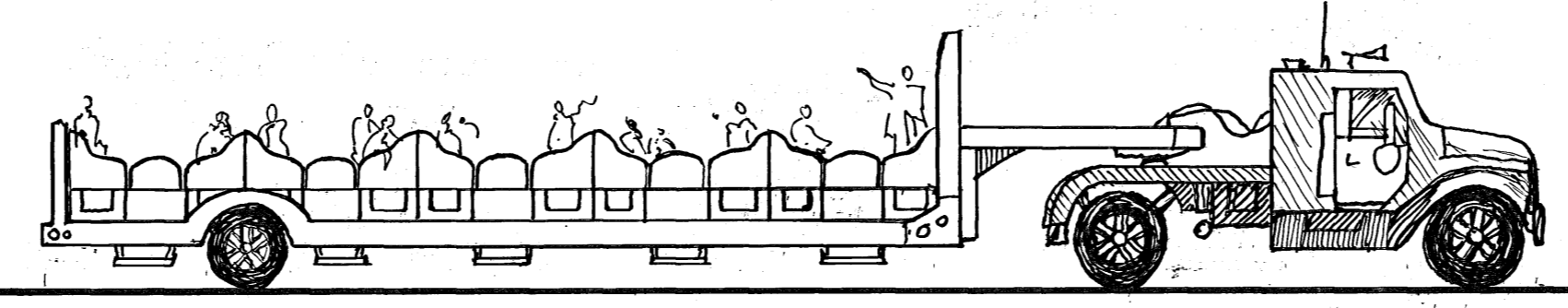
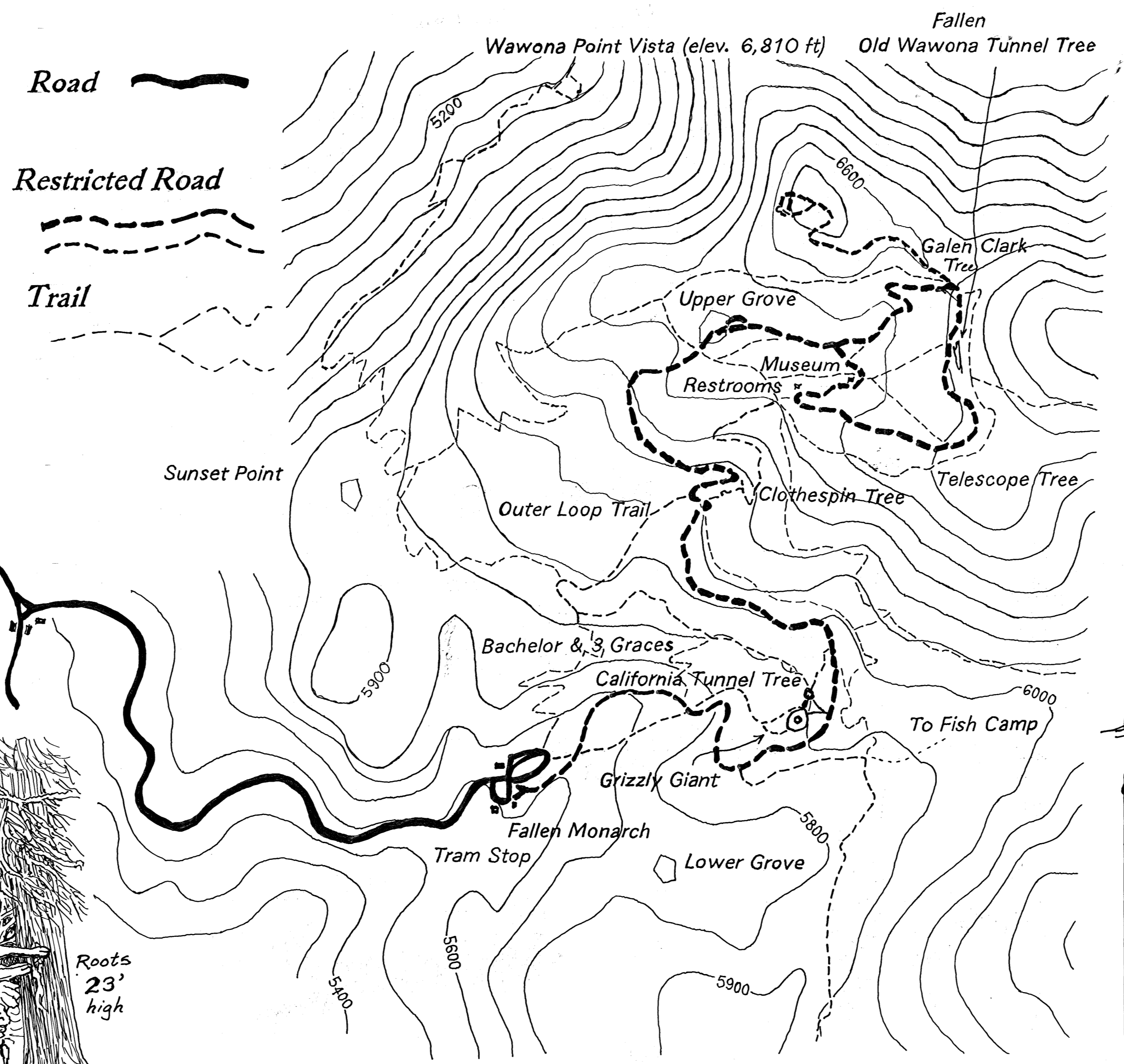


Road Section showing relationship to Sequoia Root System
Bats use fly space over Roadway

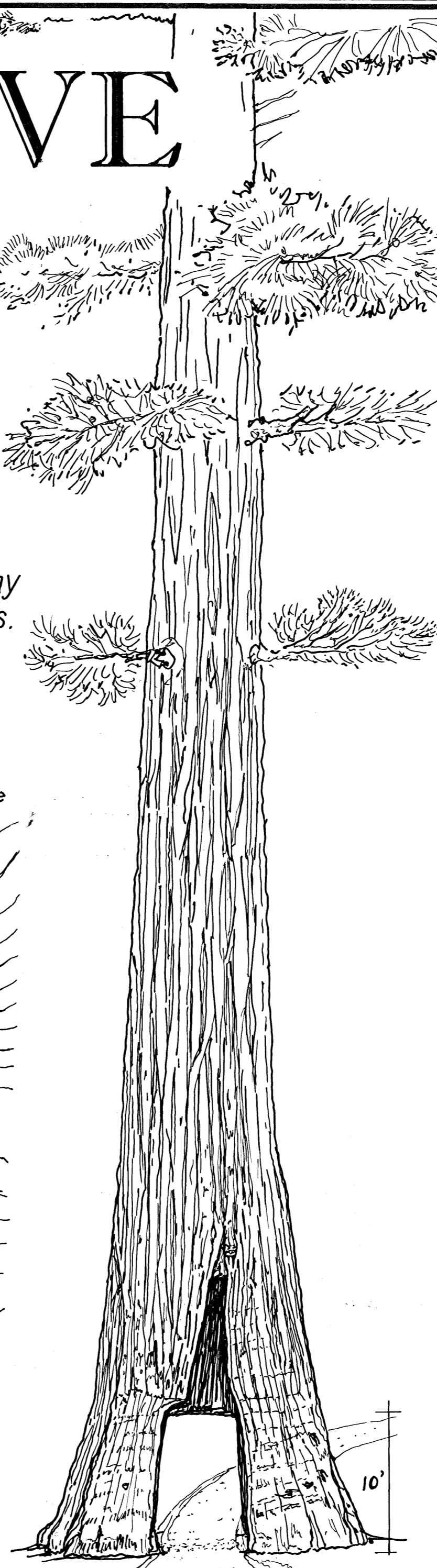


"Fallen Monarch" California Big Trees
175' long 12' wide

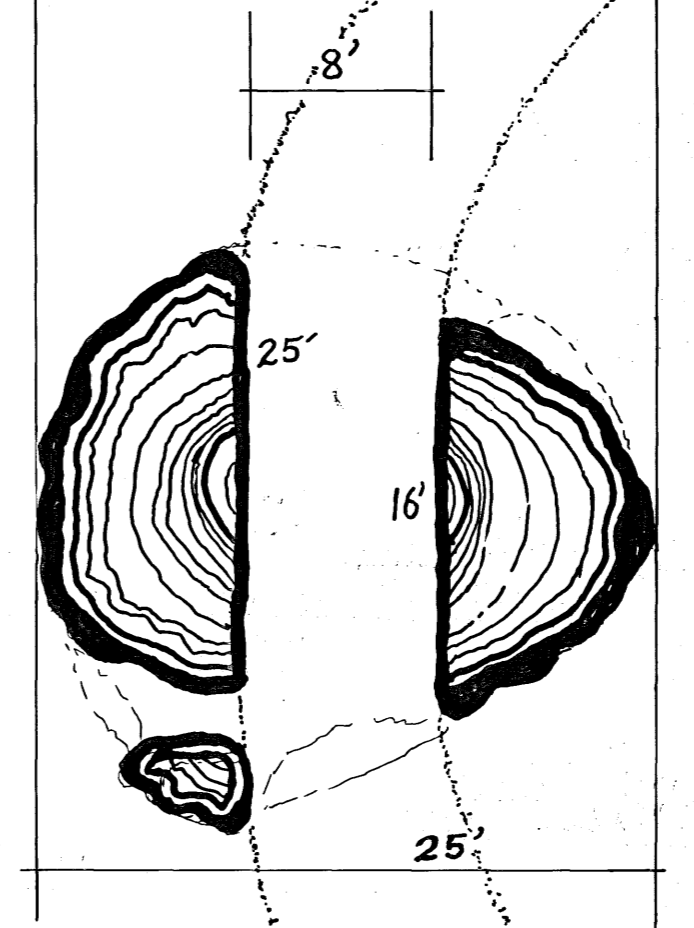
Mariposa Grove Map



Tram People Mover length 45' scale: 1" = 3/16"



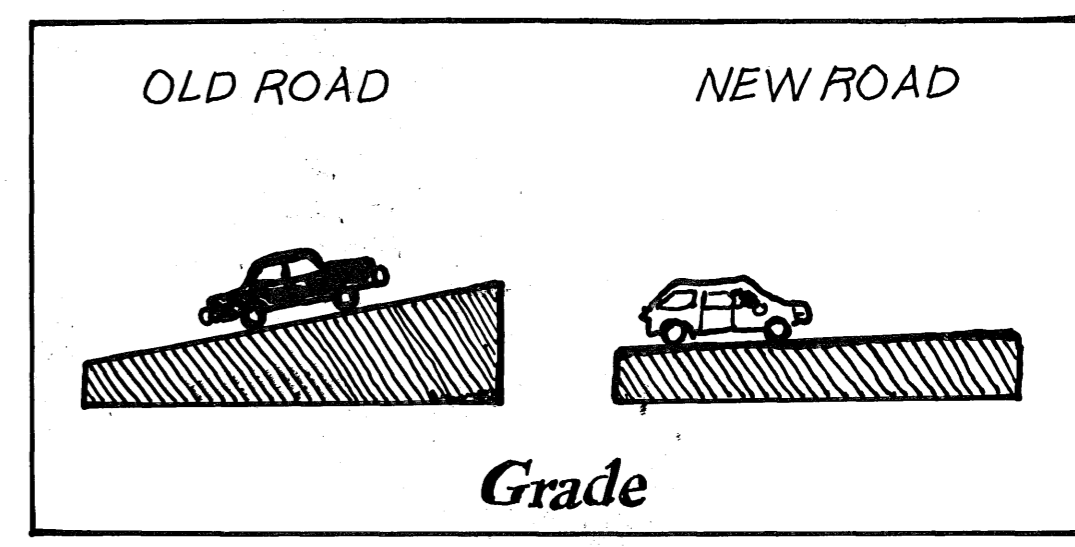
California Tunnel Tree



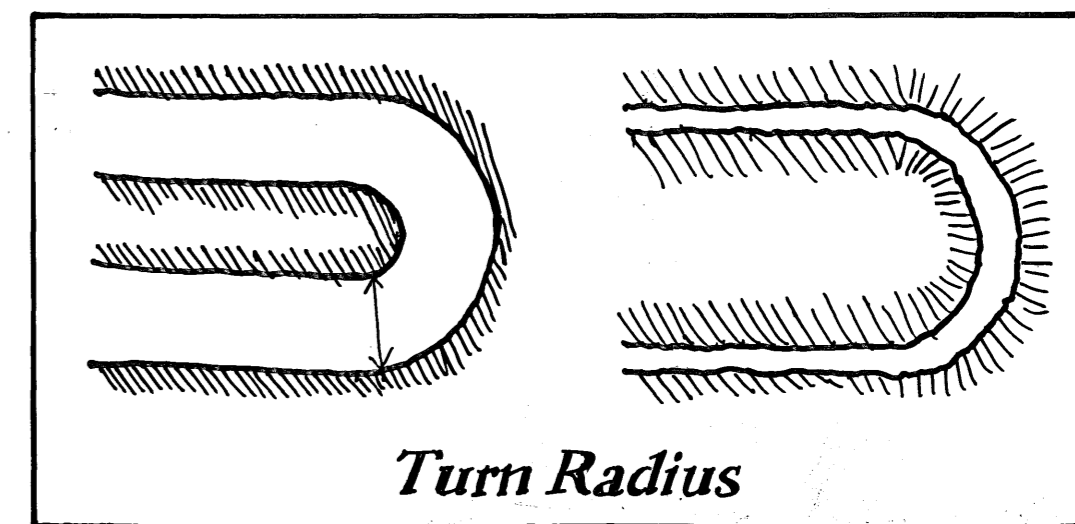
California Tunnel Tree Plan scale: 1" = 1/8"



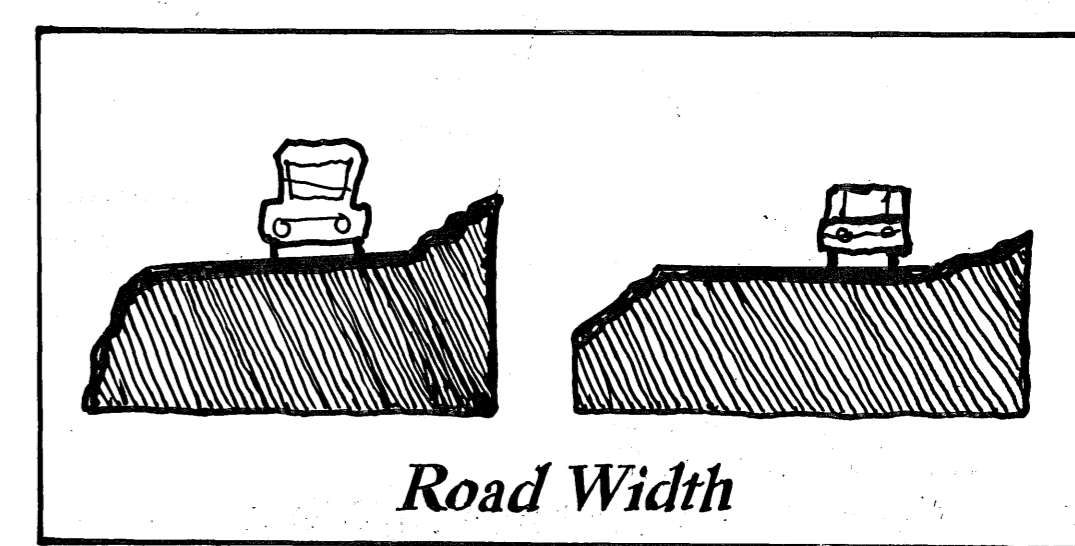
Old Wawona Tunnel Tree, Tunneled in 1881
8' wide, 9' high, & 26' long, Fell in 1969



Grade



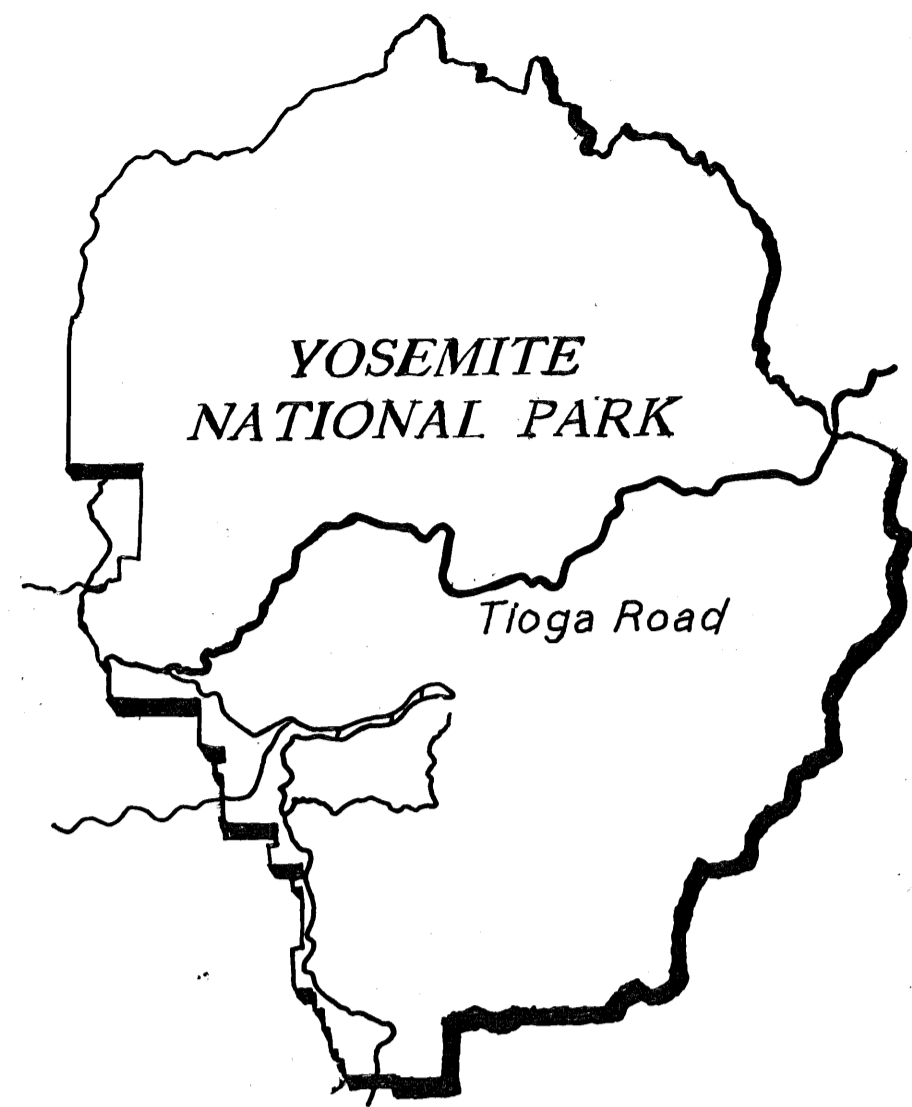
Turn Radius



Road Width

TIOGA ROAD 1883/1961

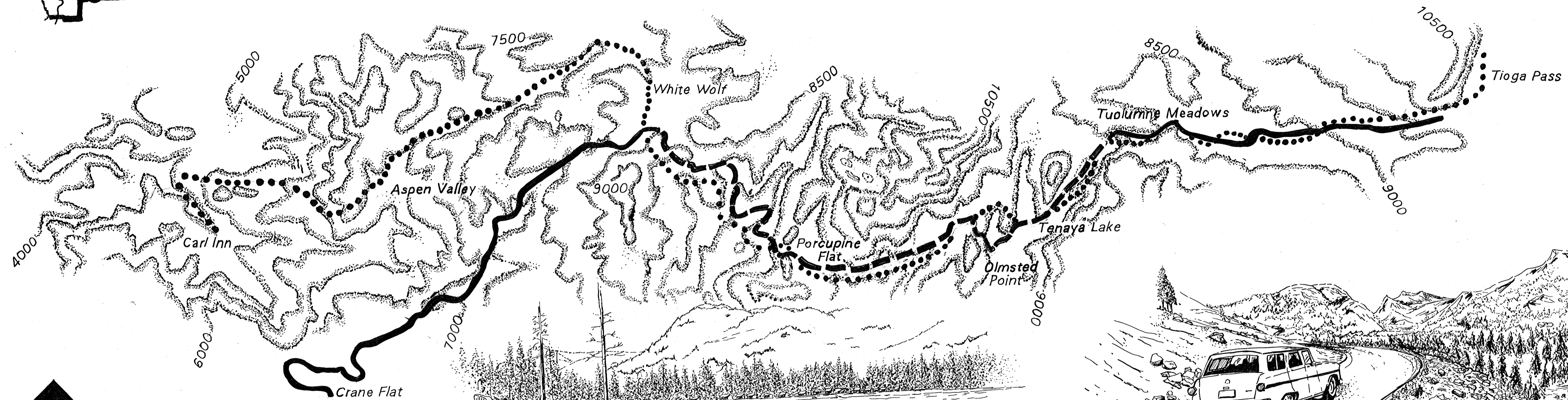
Great Sierra Mining Road



The "Great Sierra Wagon Road" was constructed in a matter of weeks by Chinese laborers to provide access to silver mines near Tioga Pass. Abandoned after the mines failed, the old road was purchased by NPS Director Stephen Mather and associates in 1915 and rebuilt as a low-speed motor road. During the Mission 66 program, the road was reconstructed as a high-speed modern highway over the objection of concerned environmentalists. It is the only road to cross the Sierra crest in the park.

TIOGA ROAD CO. RATES OF TOLLS

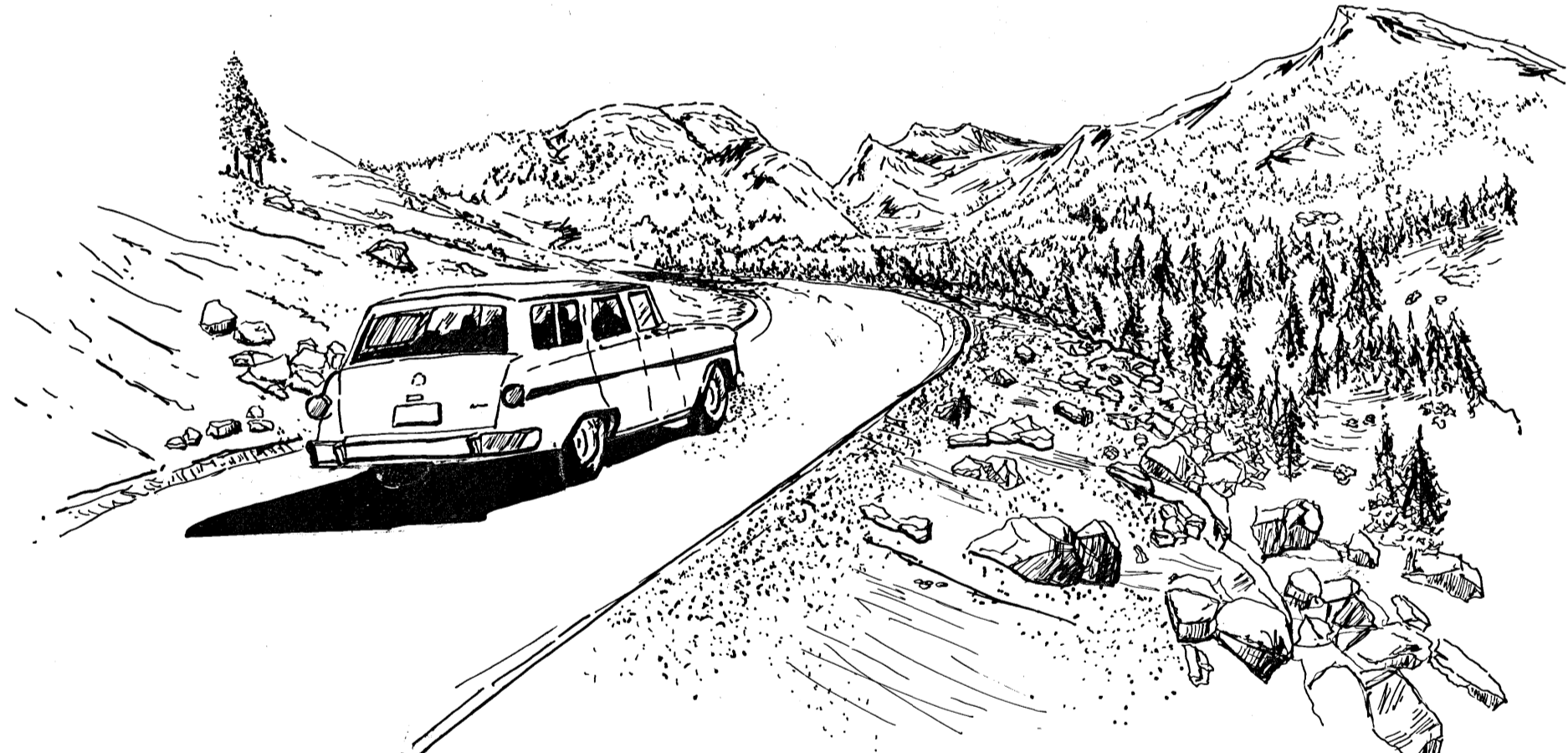
FREIGHT TEAMS . Two horses	5.00.
EACH ADDITIONAL HORSE .	1.50
EMPTY WAGONS . Half rates.	
PASSENGER TEAMS . Each horse	2.50.
FOOTMEN . EACH	1.00.
HORSE AND RIDER	2.00.
PACK ANIMALS .	1.50.
LOOSE HORSES & CATTLE .	.50.
SHEEP GOATS & HOGS .	.10.



Great Sierra Wagon Road
 Sections Rebuilt 1936-1939 ———
 Sections Rebuilt 1958-1961 - - - -



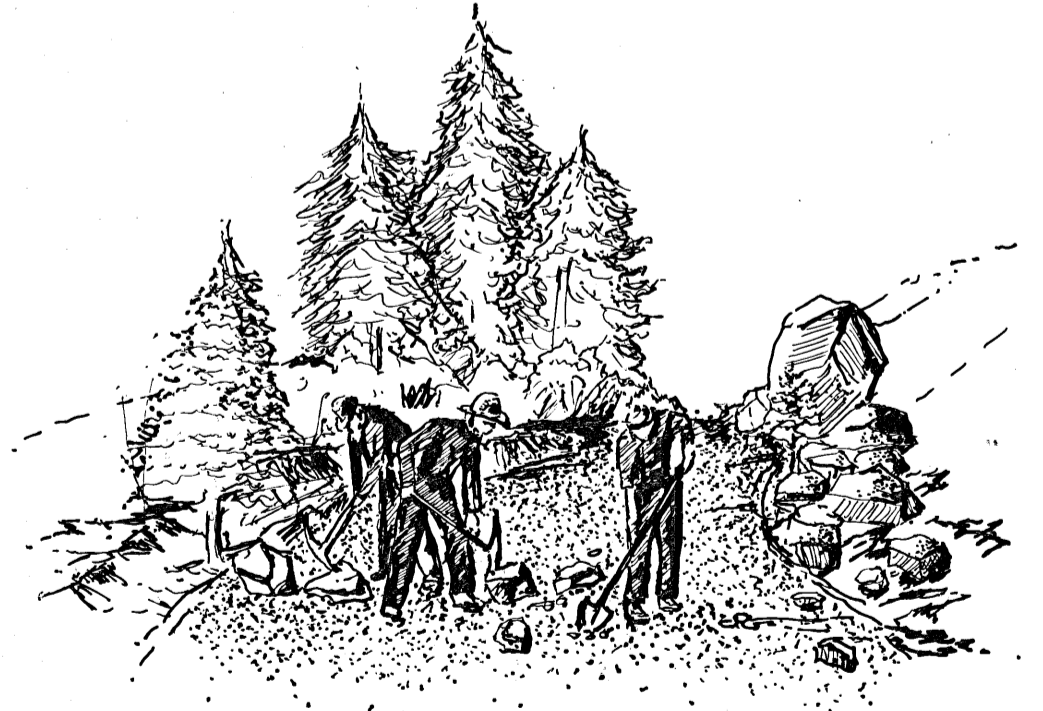
Touring Tioga Road along the shore of Tenaya Lake in the 1920s



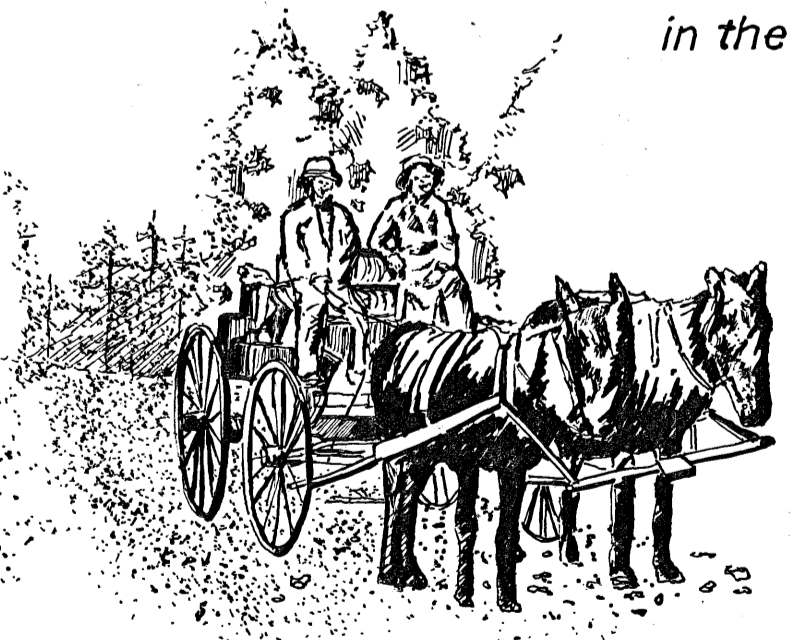
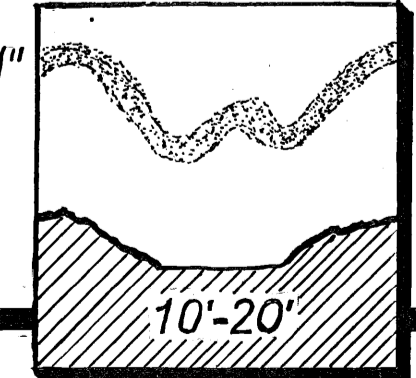
Tioga Road as a high speed modern highway



Long before Tioga road the corridor was used for hunting, gathering, and trade
Before 1882



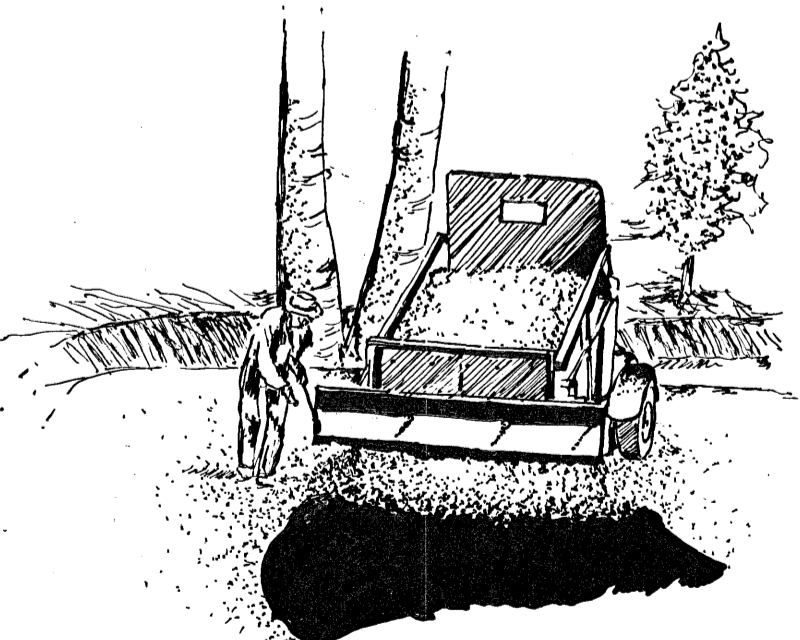
"The Great Sierra Mining Road" was constructed in less than one year
1882/83



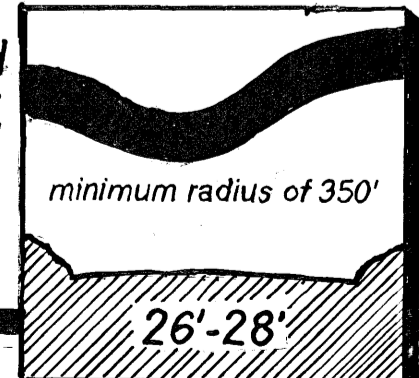
Transportation on the Tioga Road in the 1890s
1890

SPEED LIMIT 10

First autos on Road
1910s

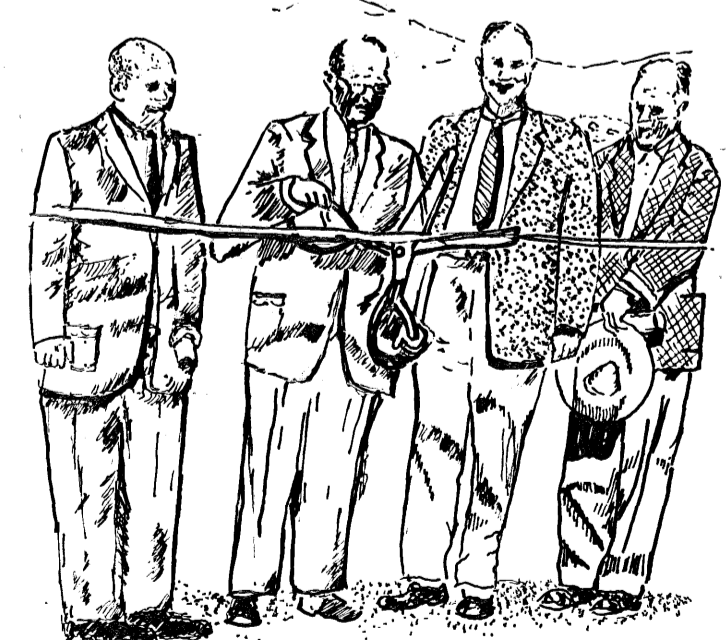


Portions of the road realigned, relocated, and widened
1930s



"Mission 66" program announced and implemented to unimproved central sections of Tioga Road

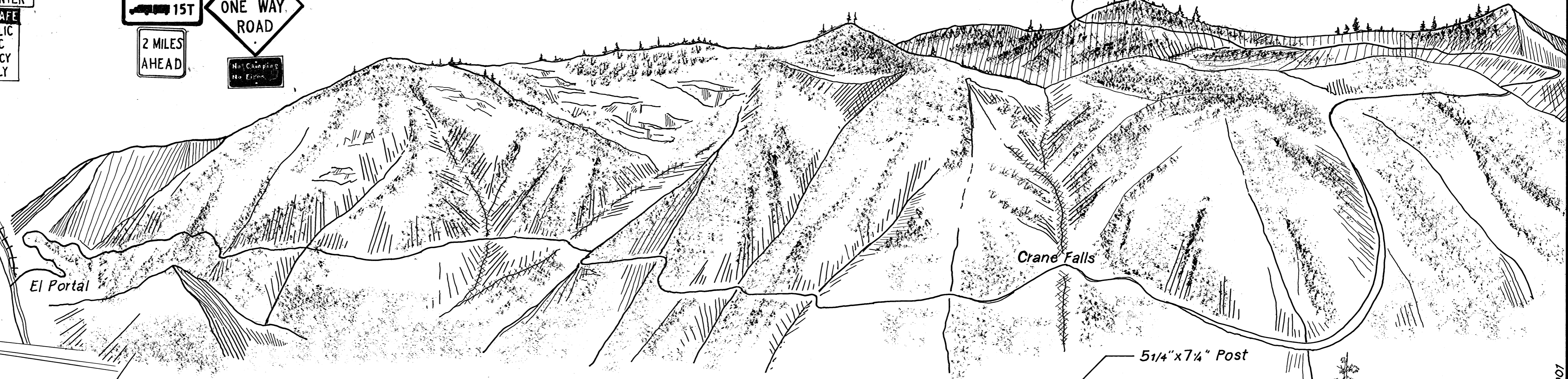
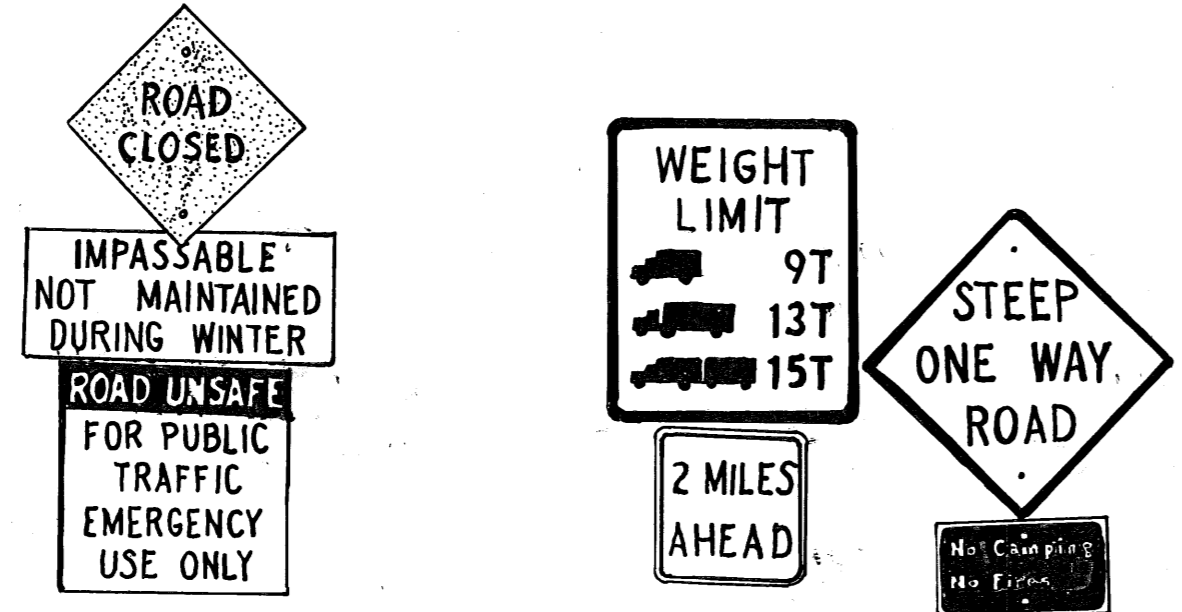
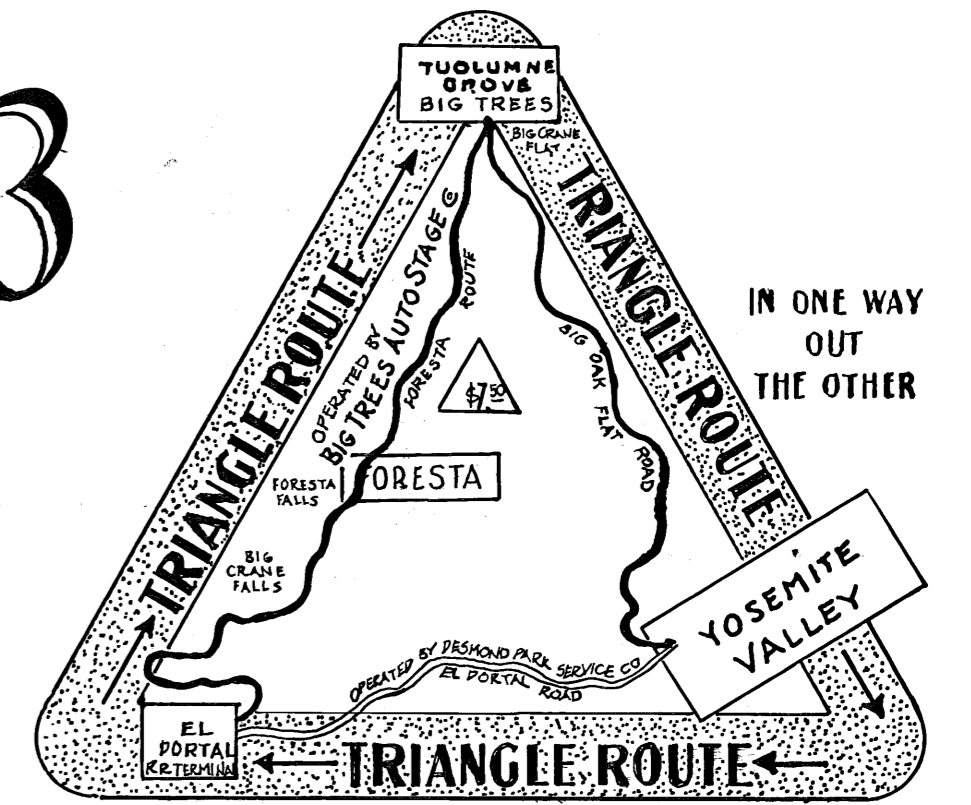
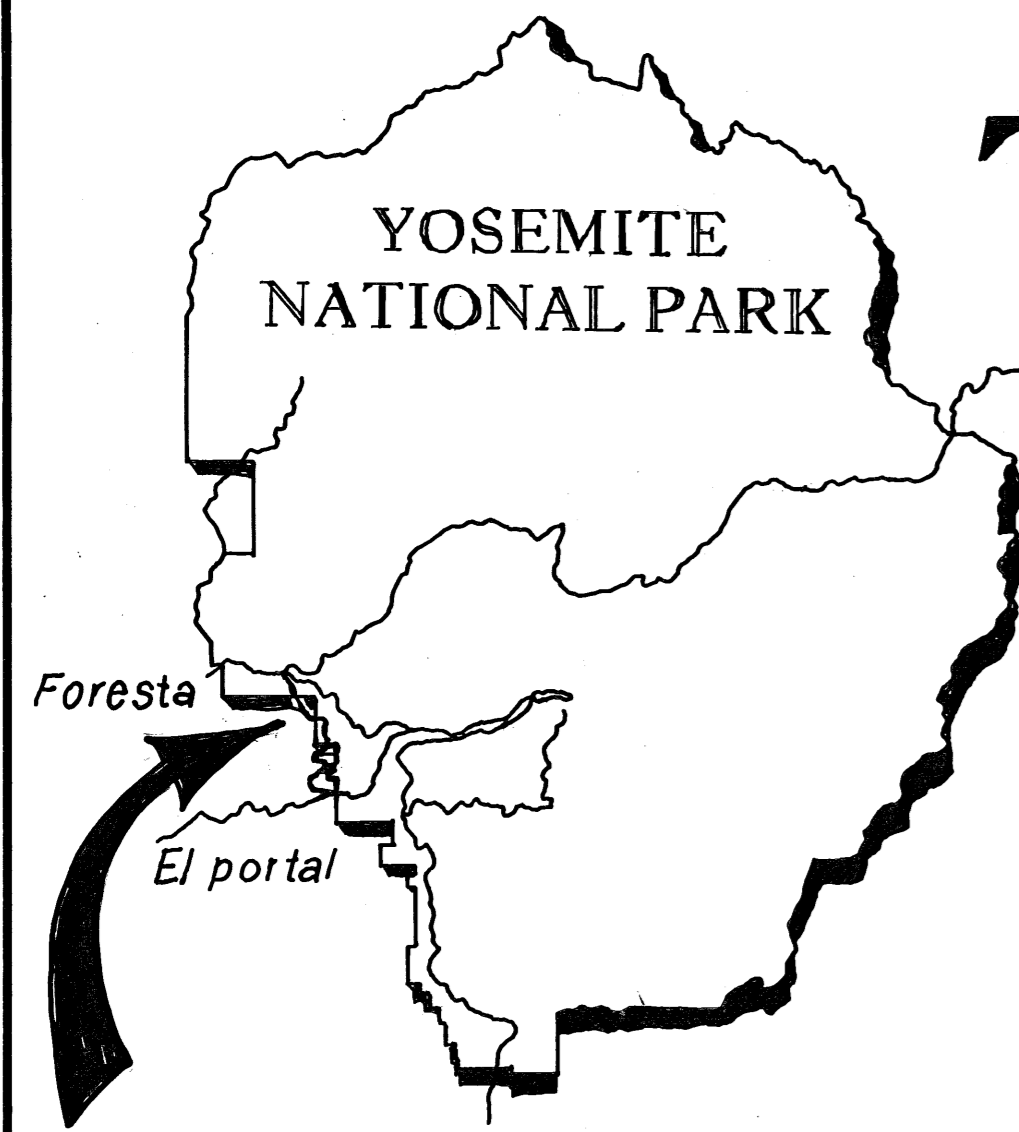
1956-1961



Tioga Road Dedication
1961- Present

THE TRIANGLE ROUTE 1913

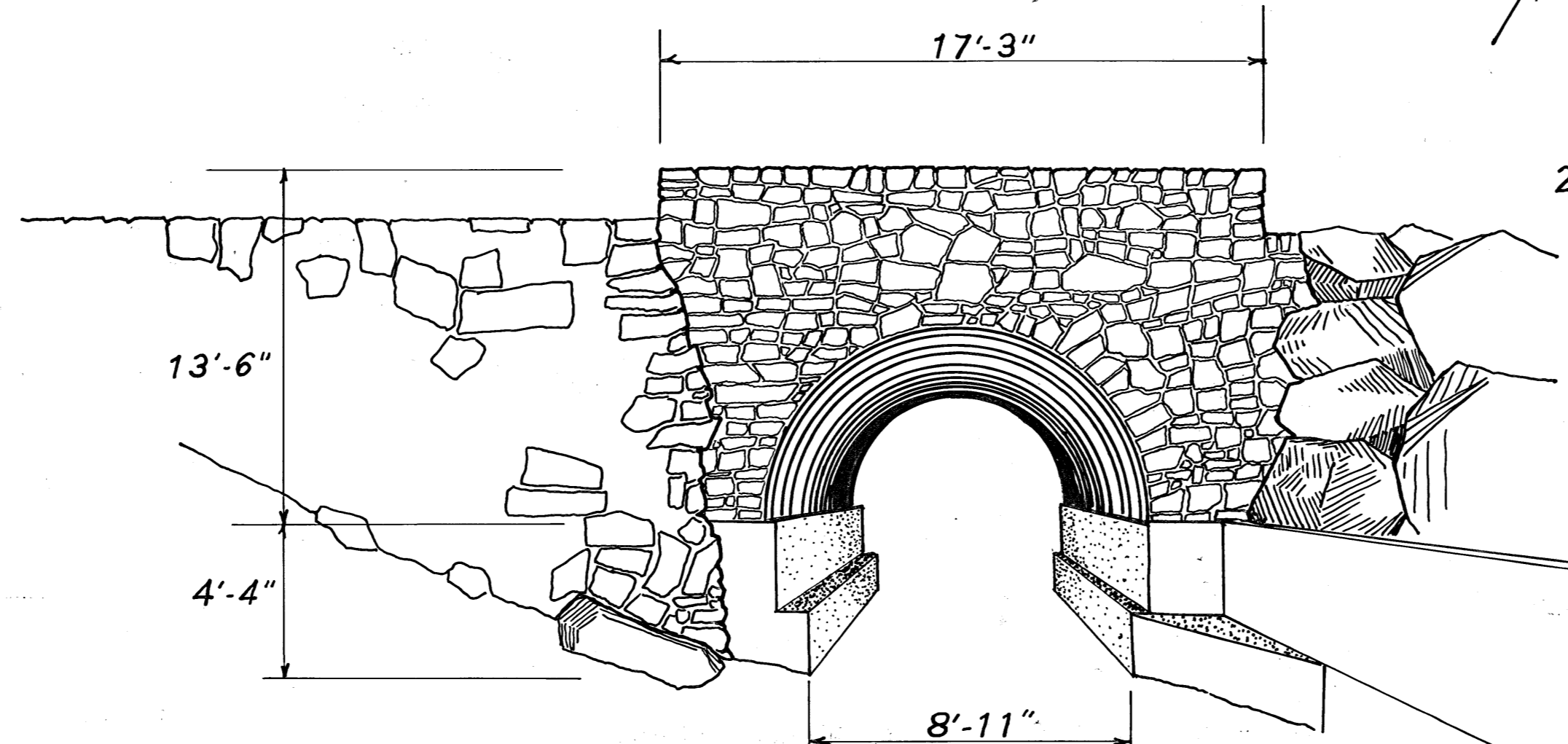
In 1913, A. B. Davis' "El Portal Big Tree Auto Stage Company" constructed a steep road from the El Portal terminus of the Yosemite Valley Rail Road up the steep cliffs to Crane Flat where a connection was made with the Old Big Oak Road. The new unpaved road offered railway visitors a chance to take a "Triangle Route" tour from El Portal to the Tuolumne Grove of giant sequoias before descending to Yosemite Valley to see its attractions. Never successful, the road is now closed at the park boundary but its route can still be followed.



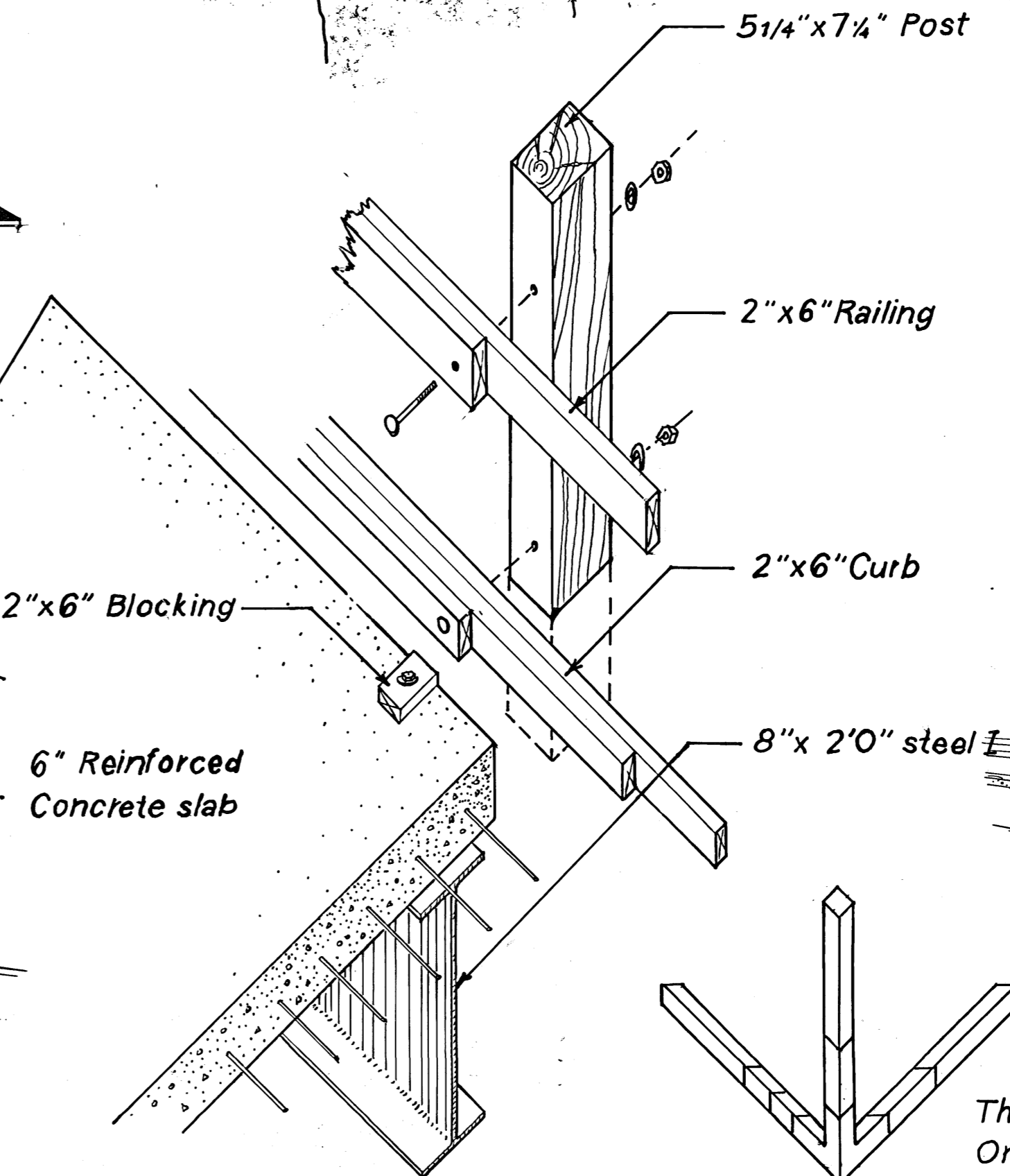
Map Not to scale



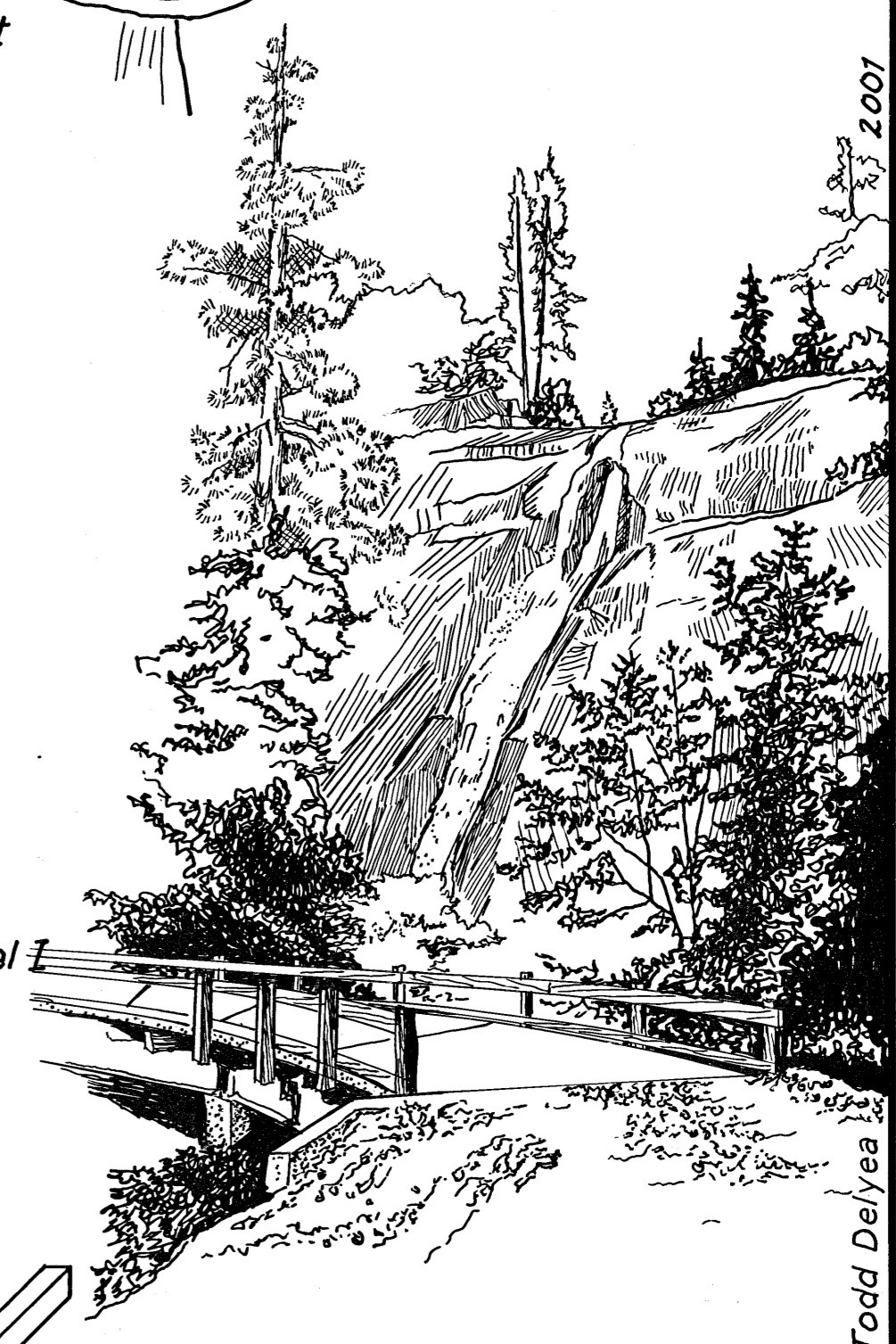
A rustic bridge took passengers beneath Crane Falls, An attraction only seen on The Foresta route.



Elevation Stone Culvert Bridge Scale: 1/4" = 1'0"



Foresta Falls Bridge Detail Scale 1" = 1'-0"



The Curved bridge at Foresta Falls is One of two curved bridges unique to The Foresta Route

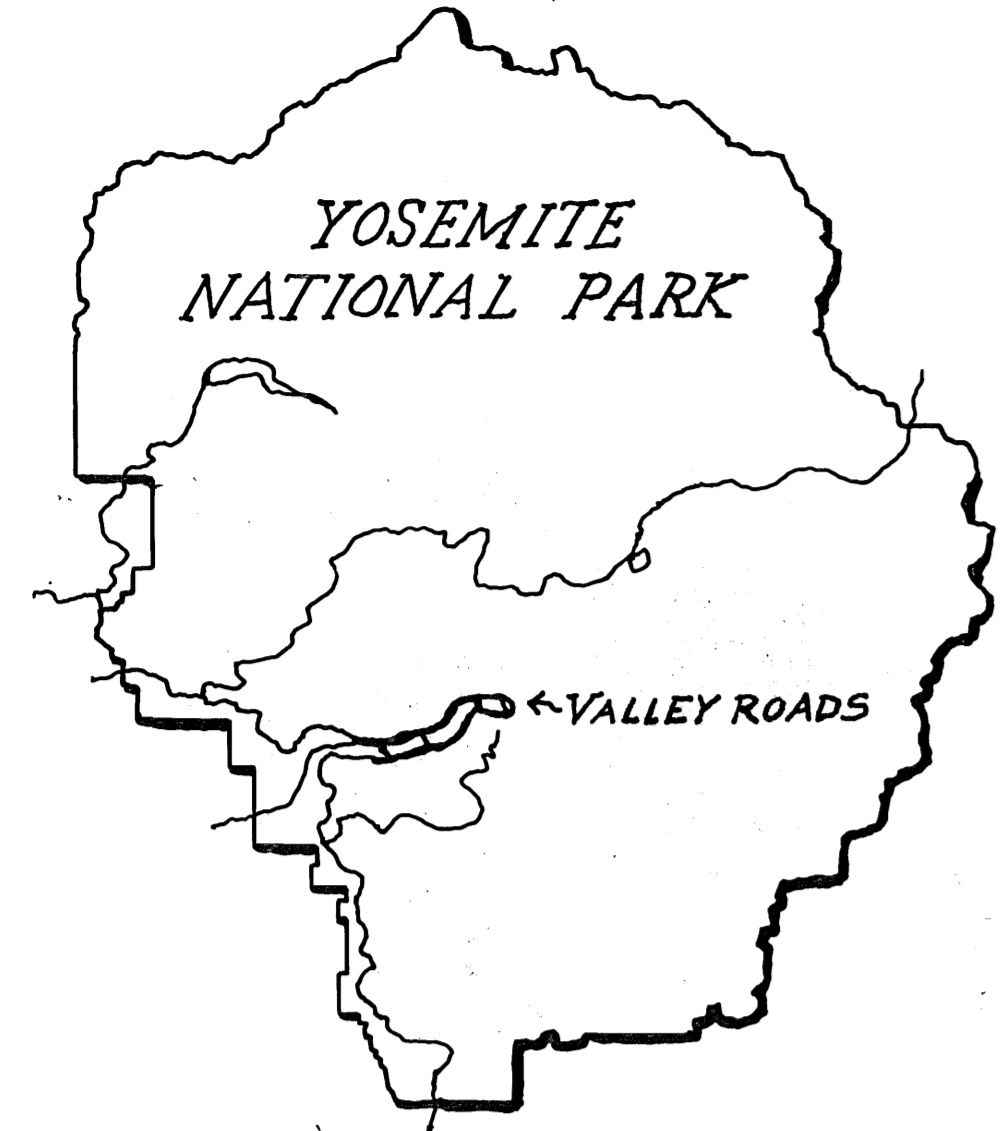
DELINEATED BY: Todd Delyea
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YOSEMITE VICINITY

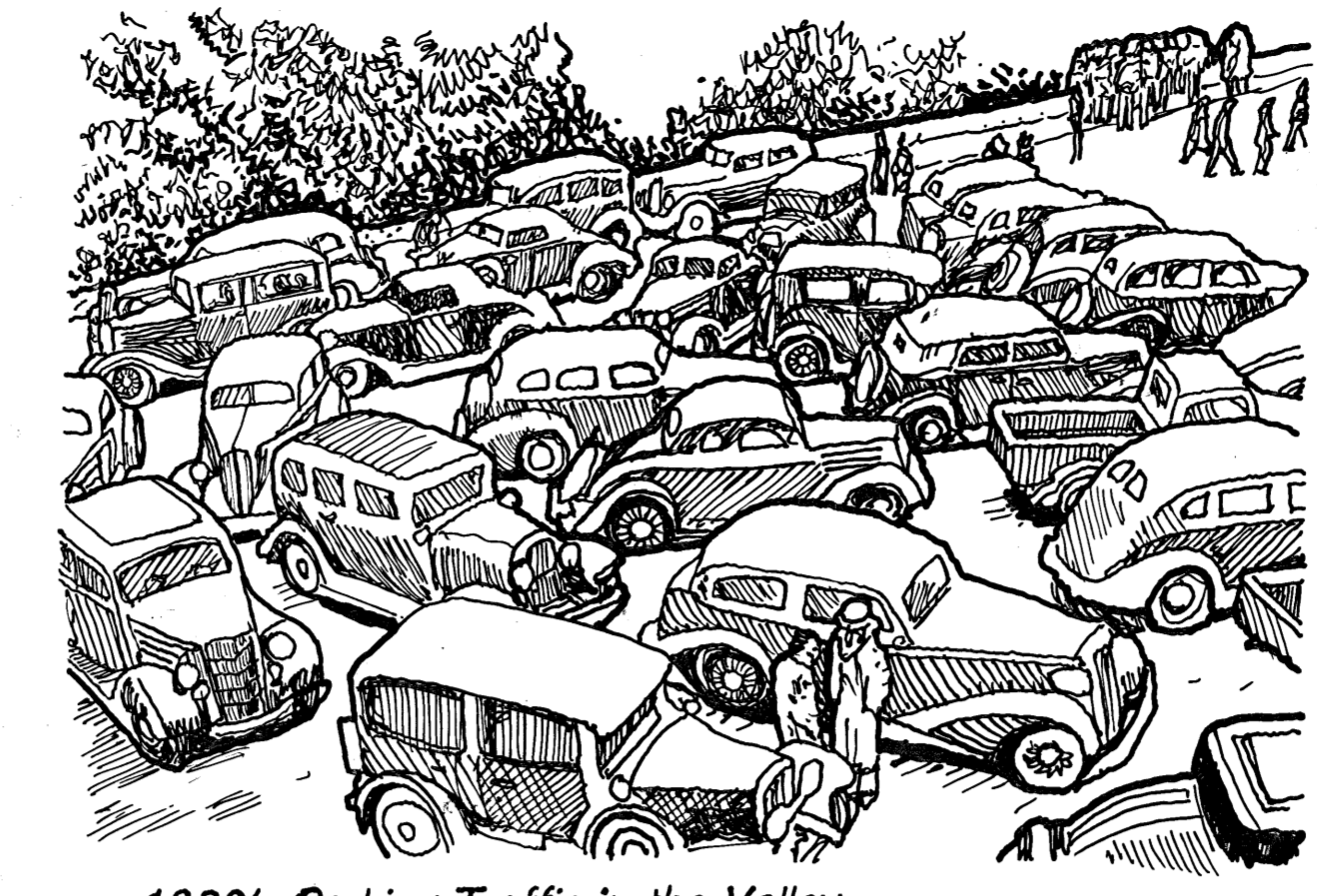
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VALLEY ROADS



The first roads in Yosemite Valley were constructed in the 1860s, years before connecting roads made their way in from the park boundaries. In 1871, guardian Galen Clark had a wagon packed in over the saddle trails and began offering tours. In the early 1900s, a carriage road system was constructed by the U.S. Army, which then administered the park. Over the years, much of the system has been reconstructed. In 1970, the roads at the eastern end of the Valley were closed to automobiles, offering hikers and cyclists a refuge from the now heavily congested road system.



1930's Parking Traffic in the Valley

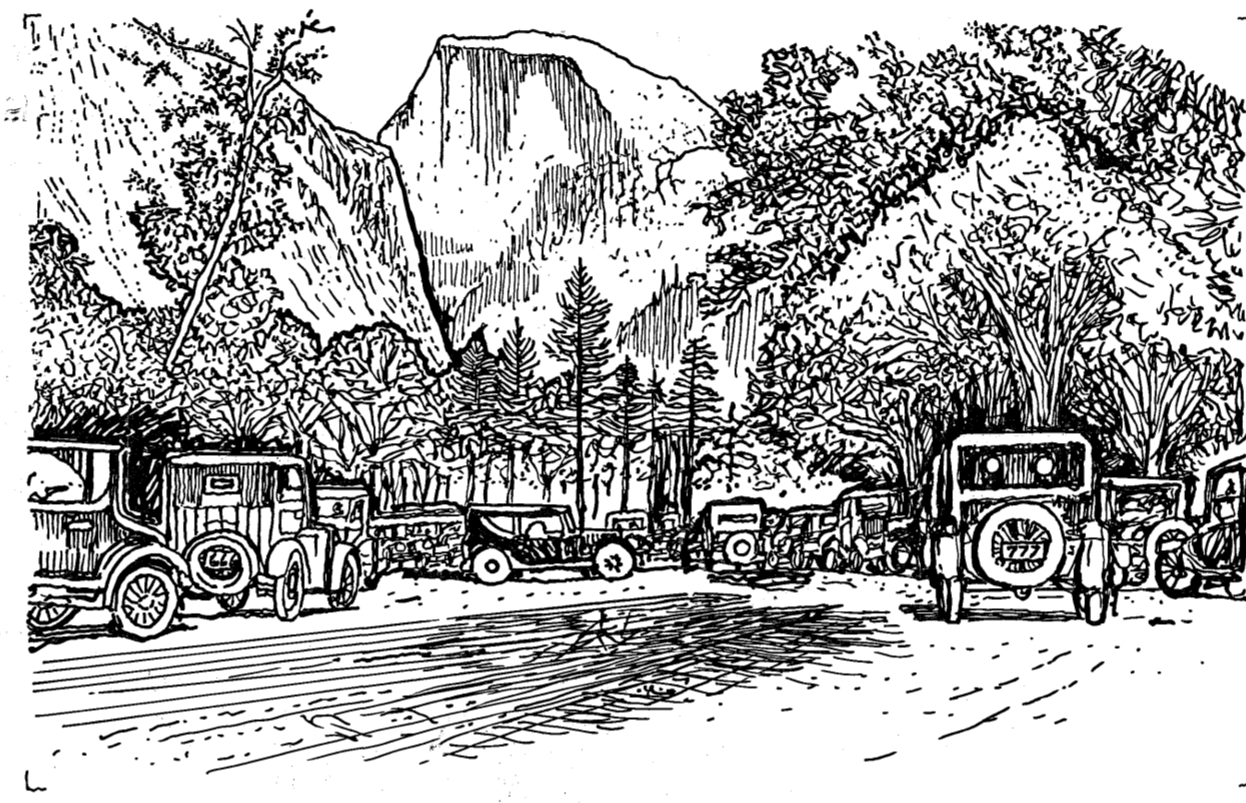
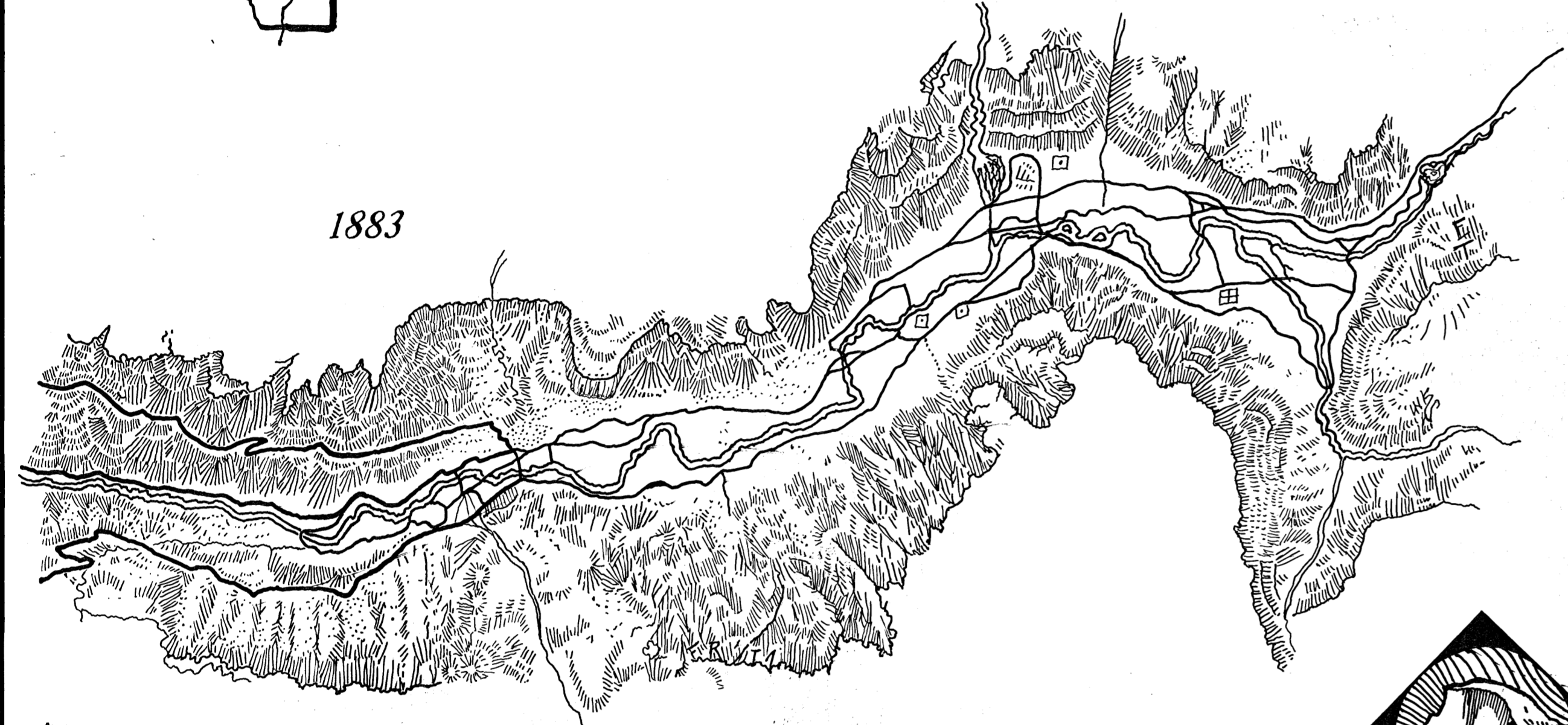
Yosemite Alternative Fuel Shuttle Bus Project



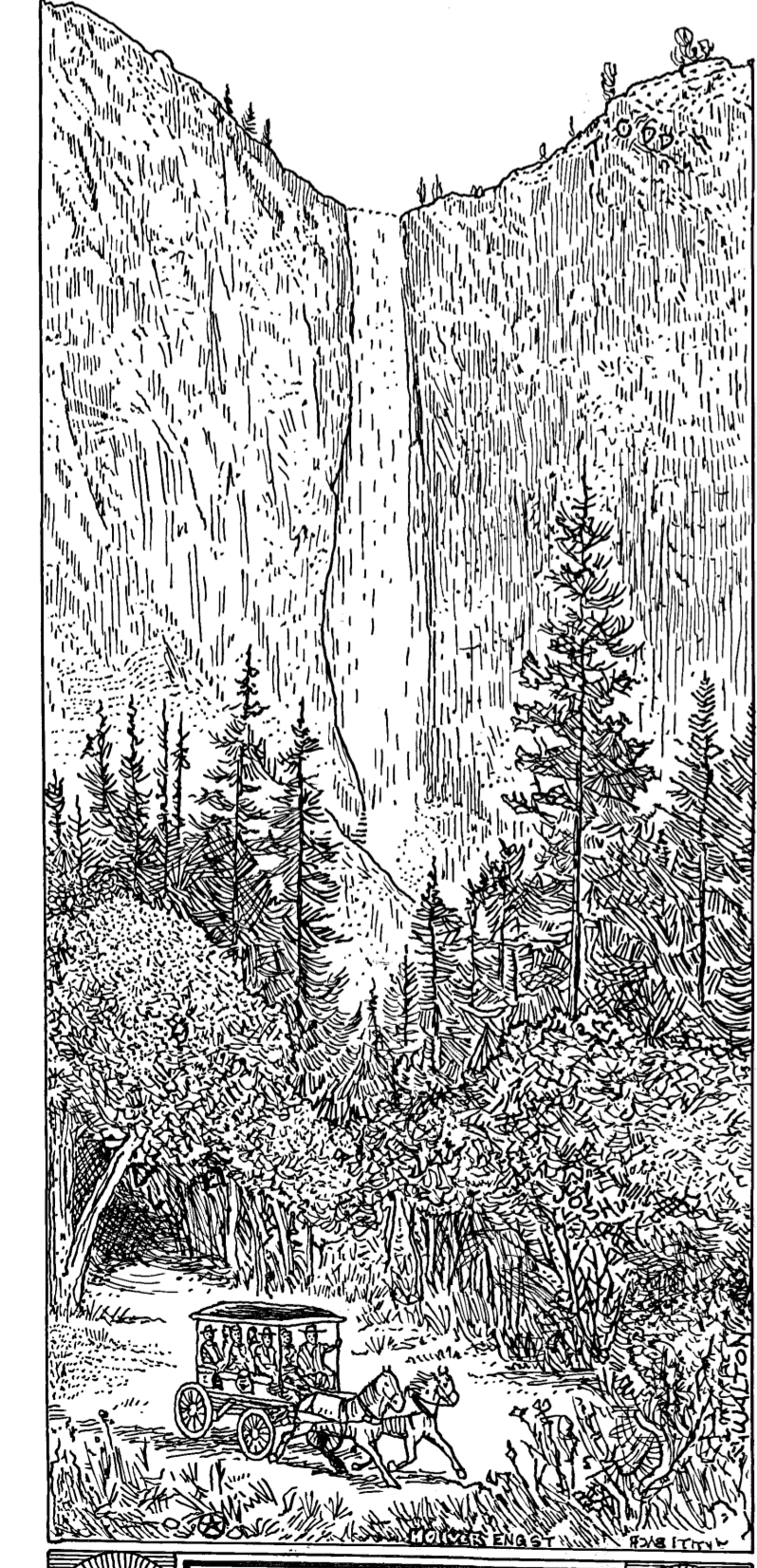
Old Roads Restricted now for walking or bicycles



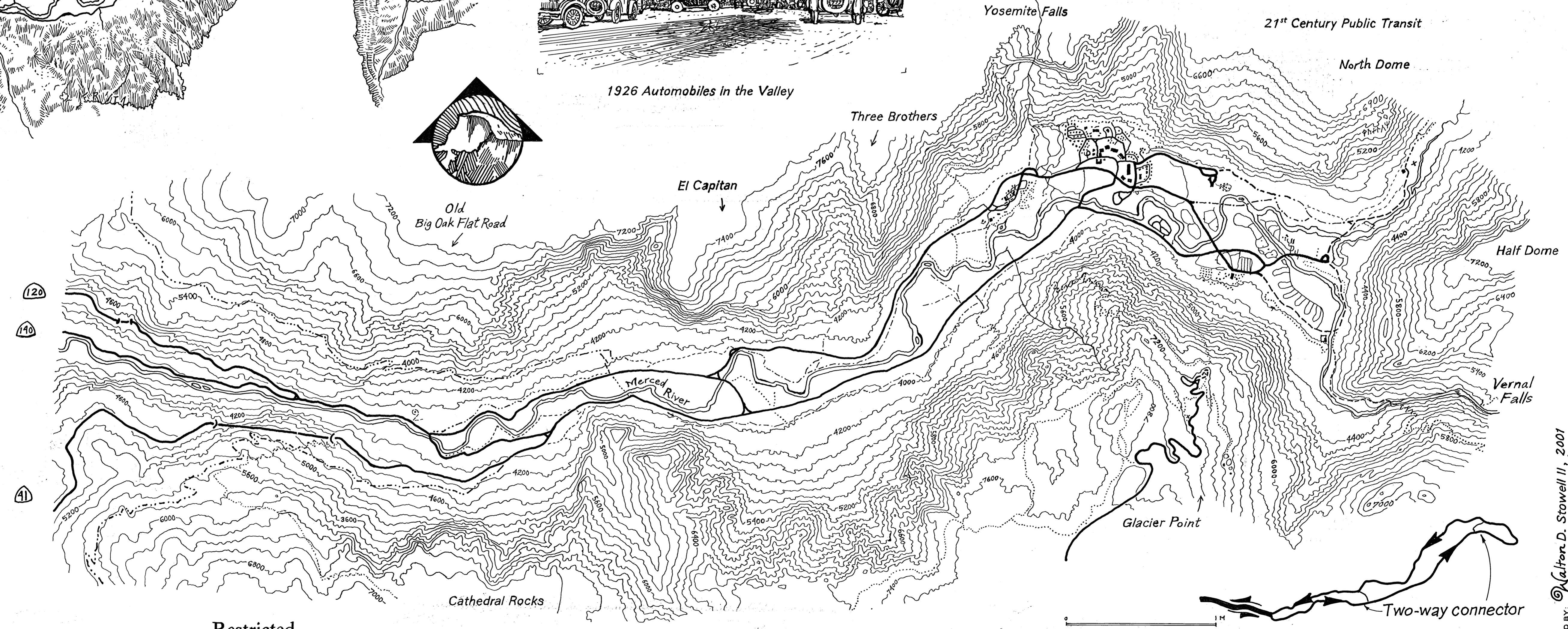
21st Century Public Transit



1926 Automobiles in the Valley



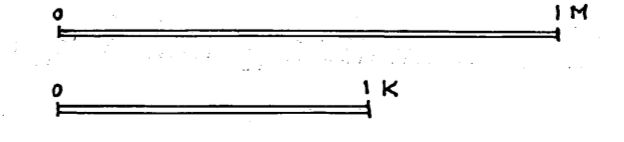
BRIDAL VEIL FALL, YOSEMITE VALLEY



Road ———

Restricted Road or Trail - - - - -

2001 Valley Roads Plan



VALLEY TRAFFIC FLOW

DELINEATED BY: Walter D. Stowell II, 2001

NPS ROADS & BRIDGES RECORDING PROGRAM UNITED STATES DEPARTMENT OF THE INTERIOR

YOSEMITE VICINITY

MARIPOSA & TUOLUMNE COUNTIES

ADDENDUM: YOSEMITE NATIONAL PARK ROADS & BRIDGES

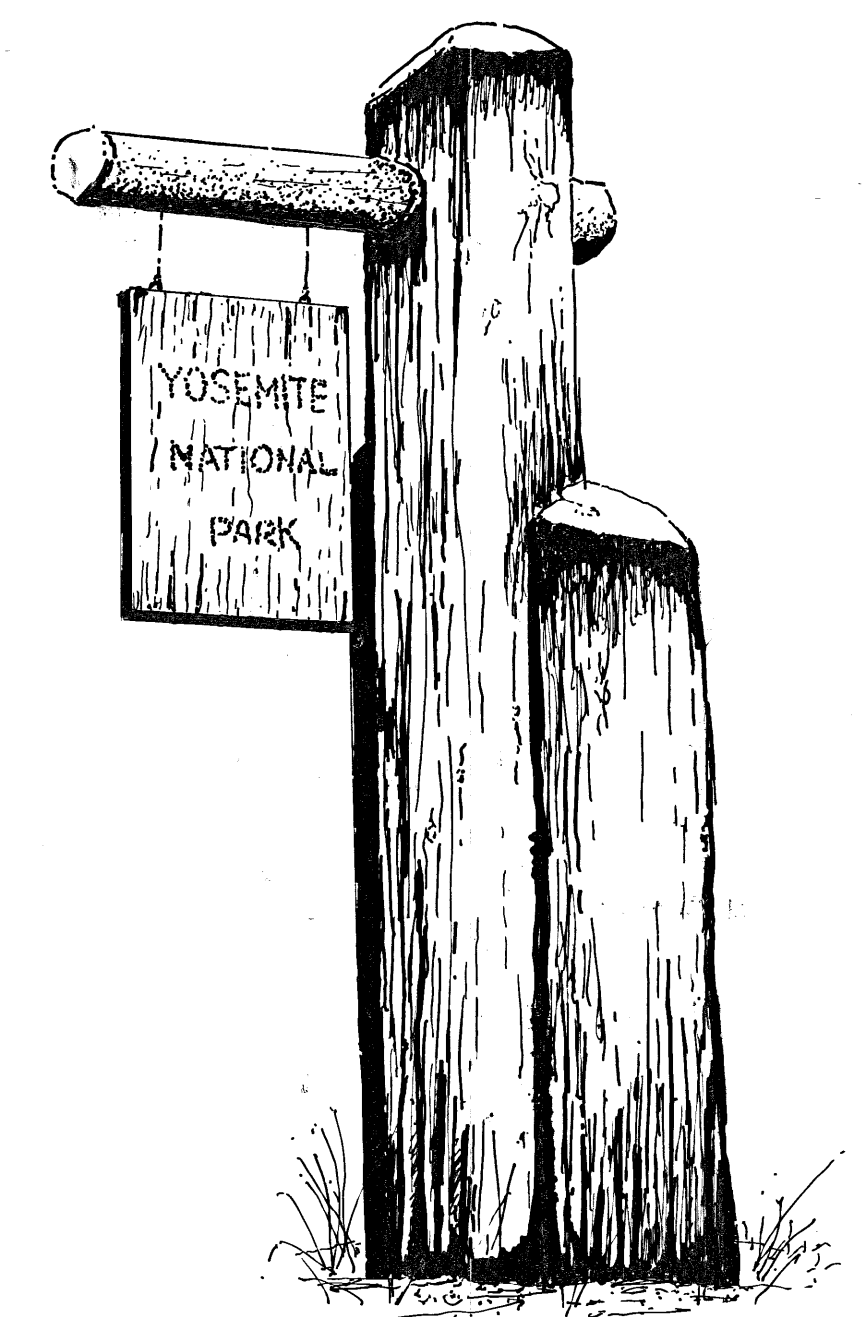
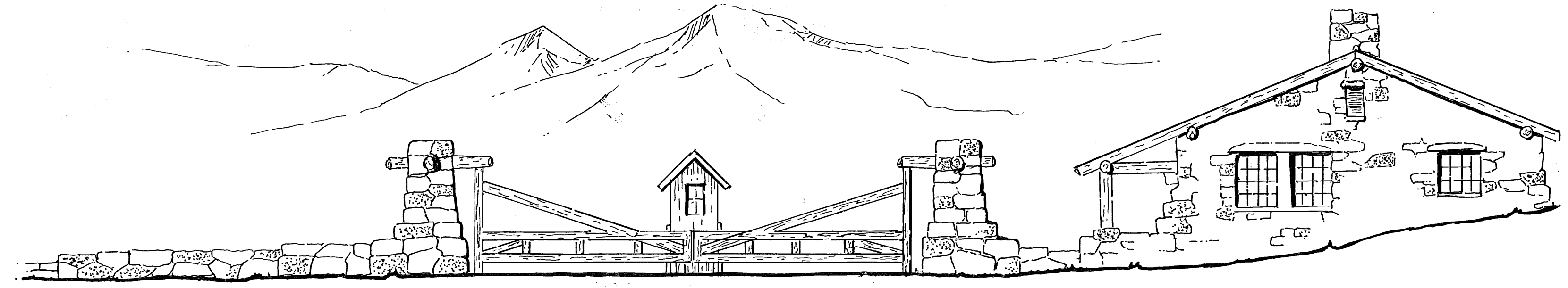
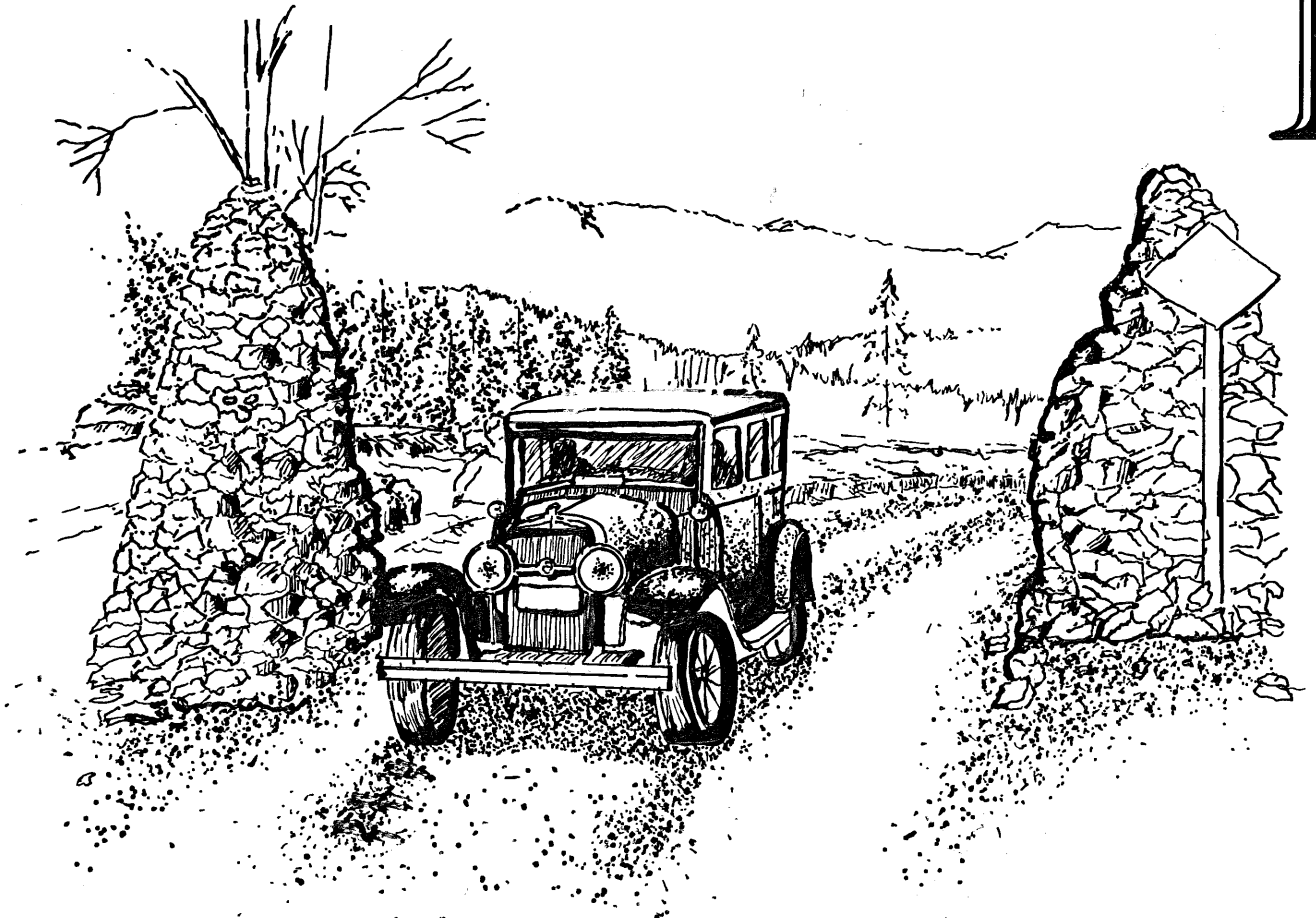
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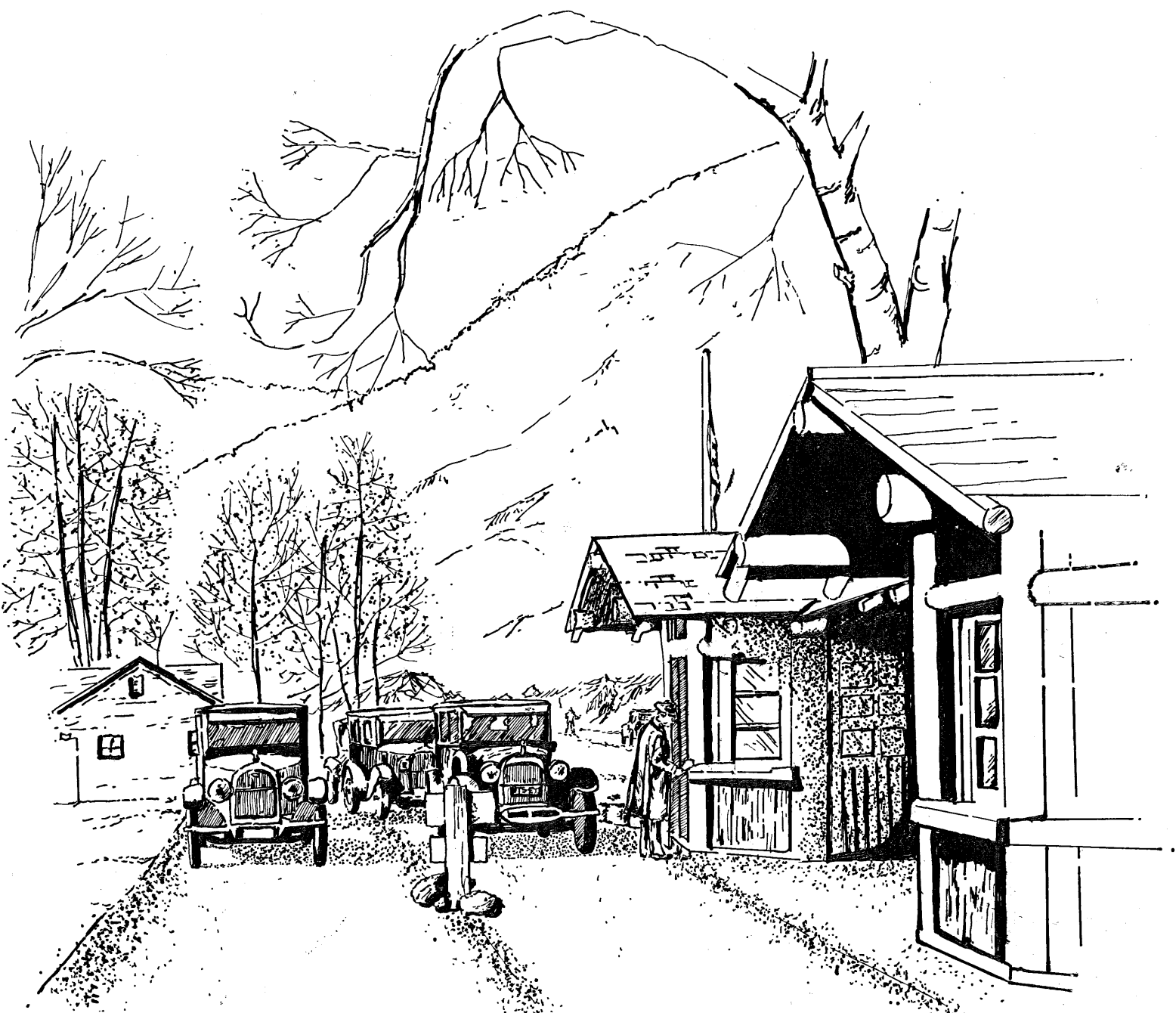
ENTRANCE STATIONS



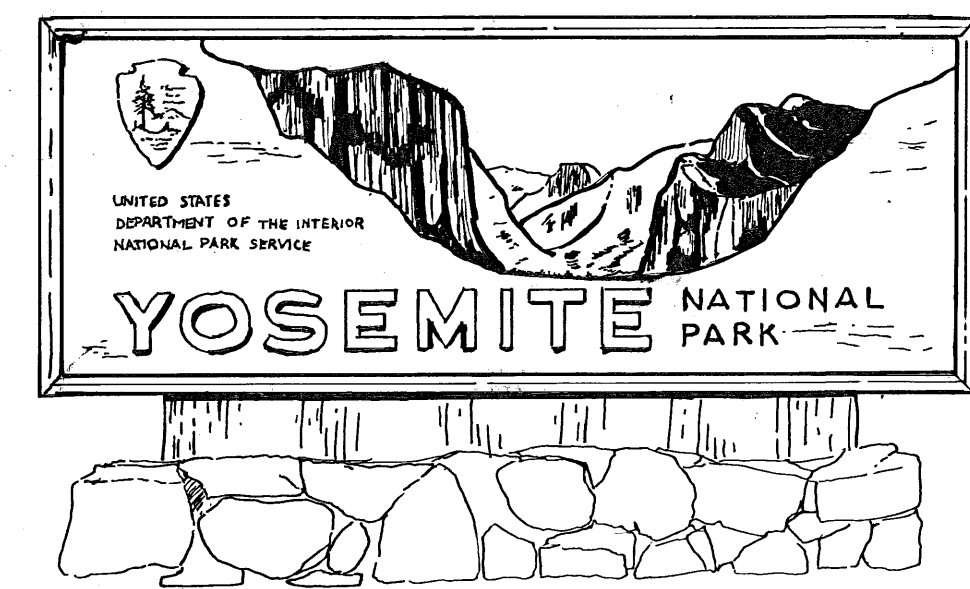
Tioga Pass Entrance Station was constructed in the 1930s with the "Rustic" style used by the National Park Service

Sign located at Big Oak Flat Entrance in 1941

Even before automobiles were admitted to Yosemite, an entrance fee was charged for admission. With the opening of the park roads to motorists, entrance stations were established to collect the fees and to provide information for visitors. The earliest entrance stations were built of logs and boulders in the prevailing rustic style. Later fee booths sometimes incorporated native materials but were strictly functional structures of simpler and less expensive construction.



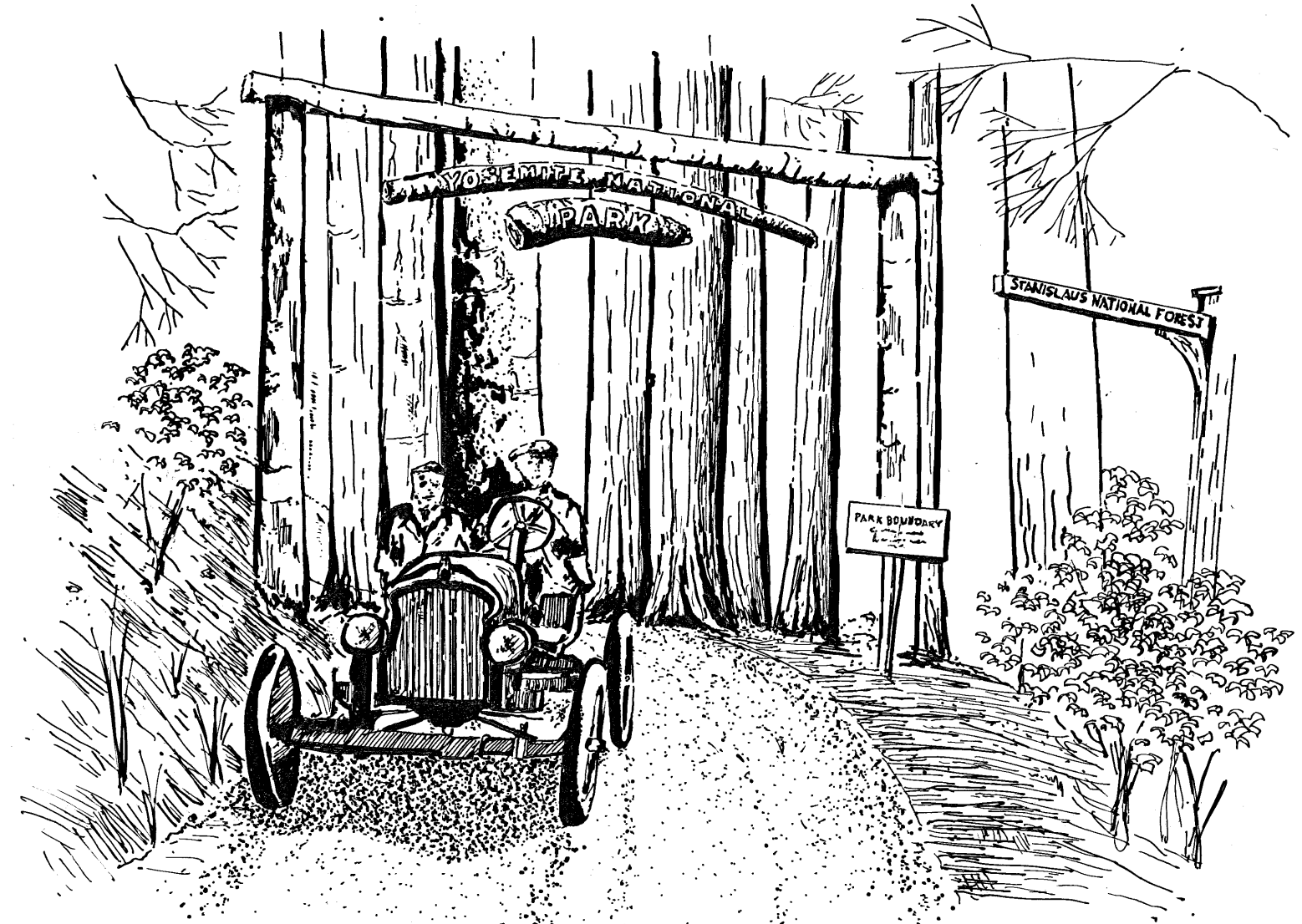
"Rustic" Arch Rock Entrance in the 1930s



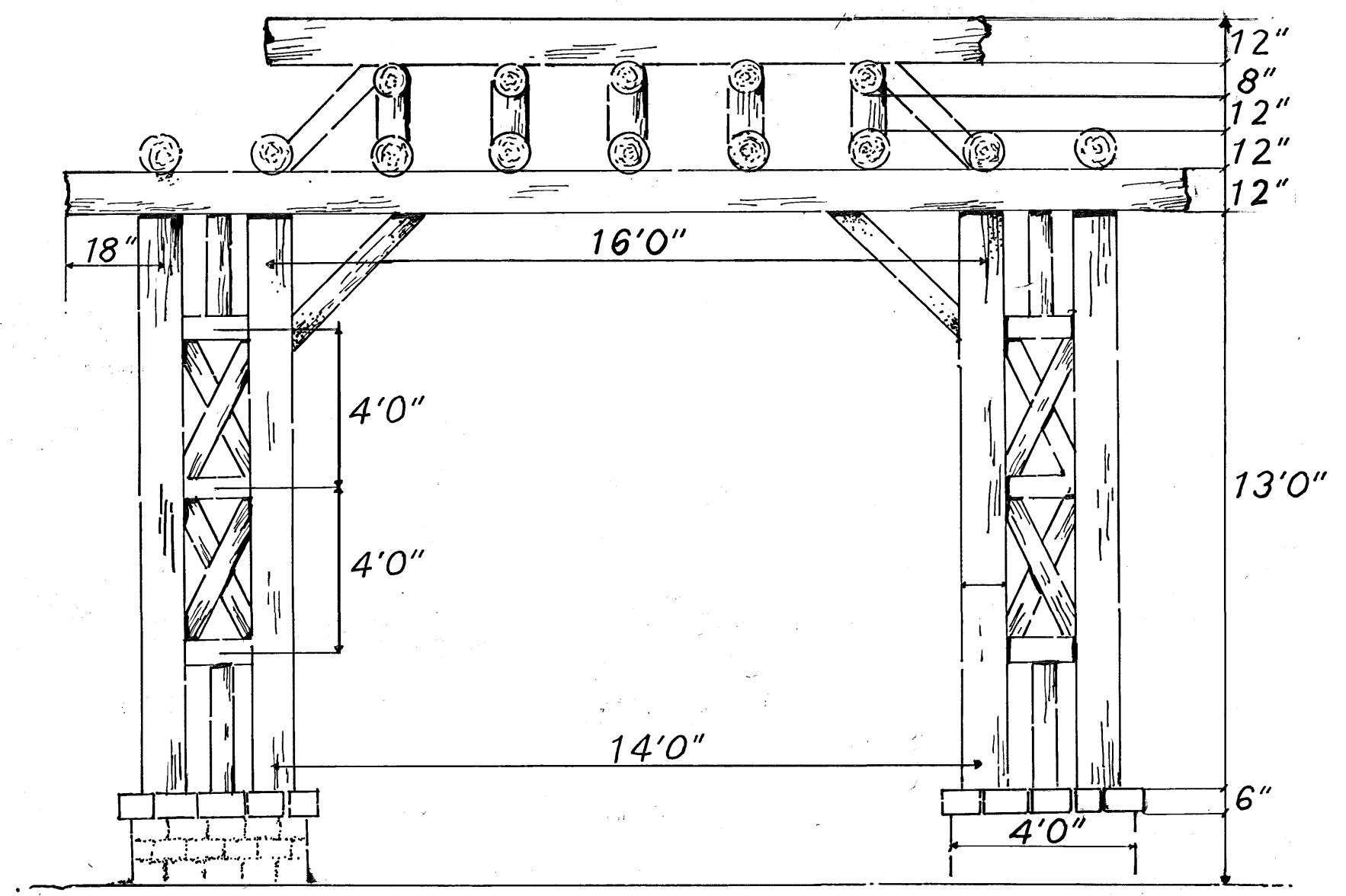
"Mission 66" sign located at Big Oak Flat Entrance



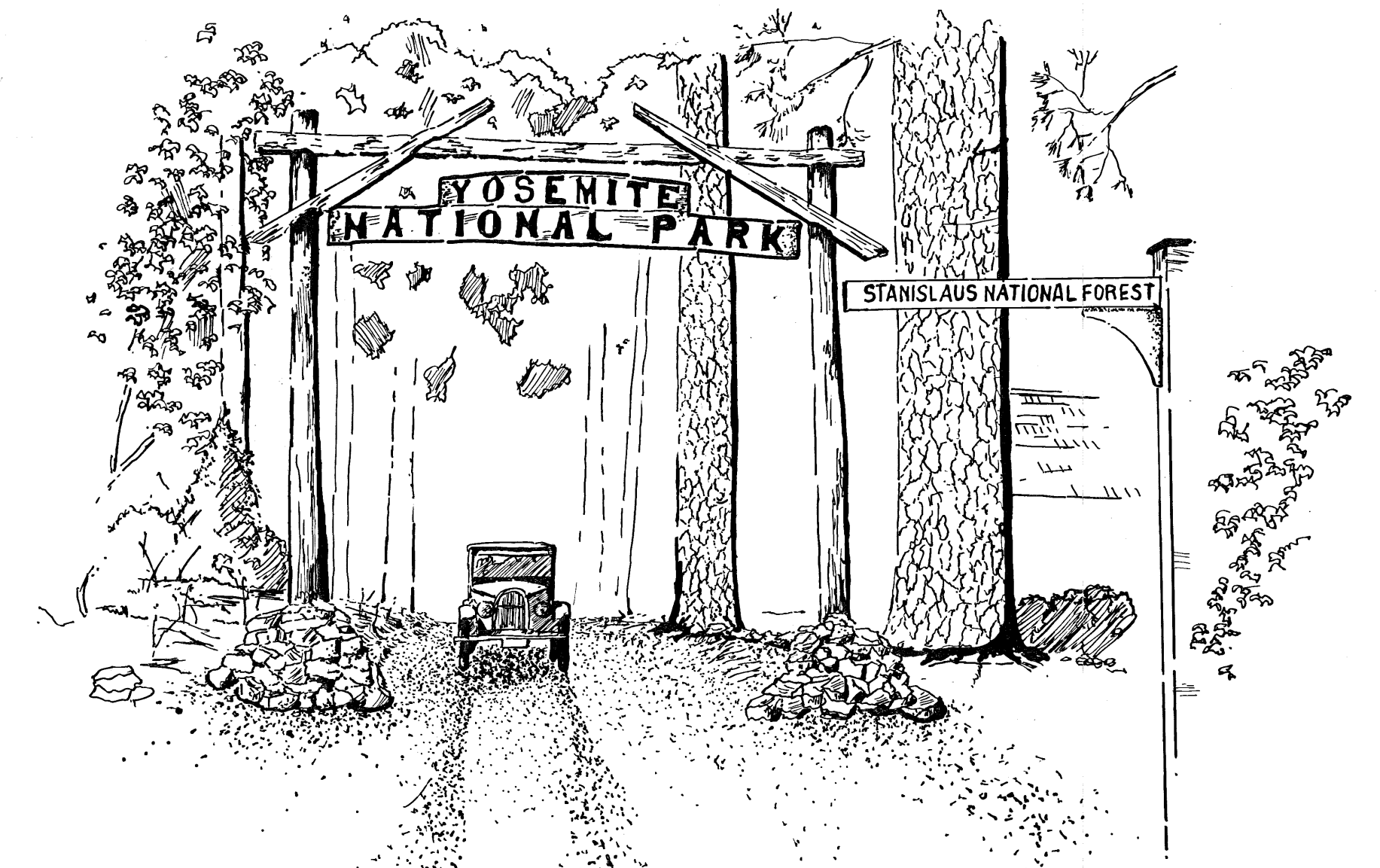
"Mission 66" South Entrance Station erected in the late 1950s



Coulterville Entrance in 1913



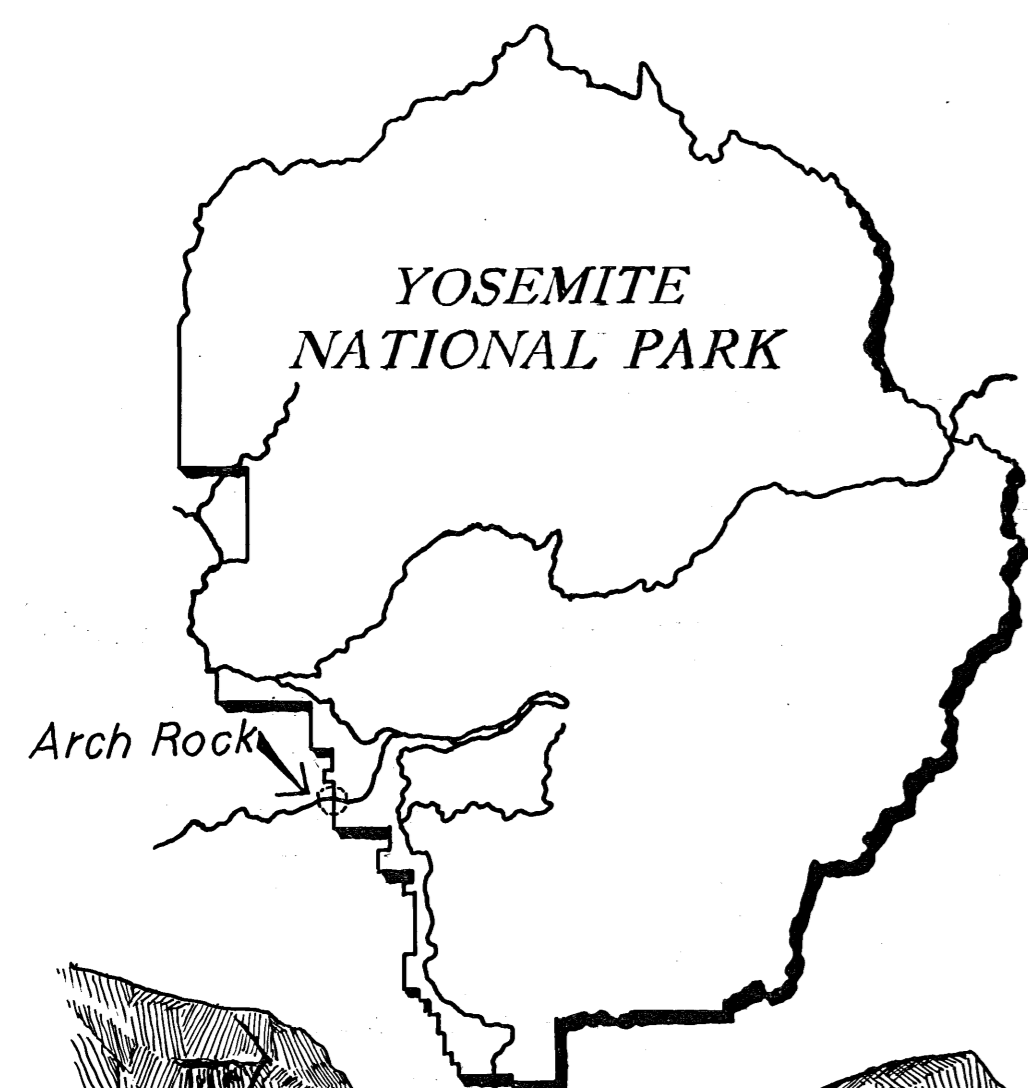
Wawona Entrance on the Chunchilla Mountain Road constructed in the 1920s



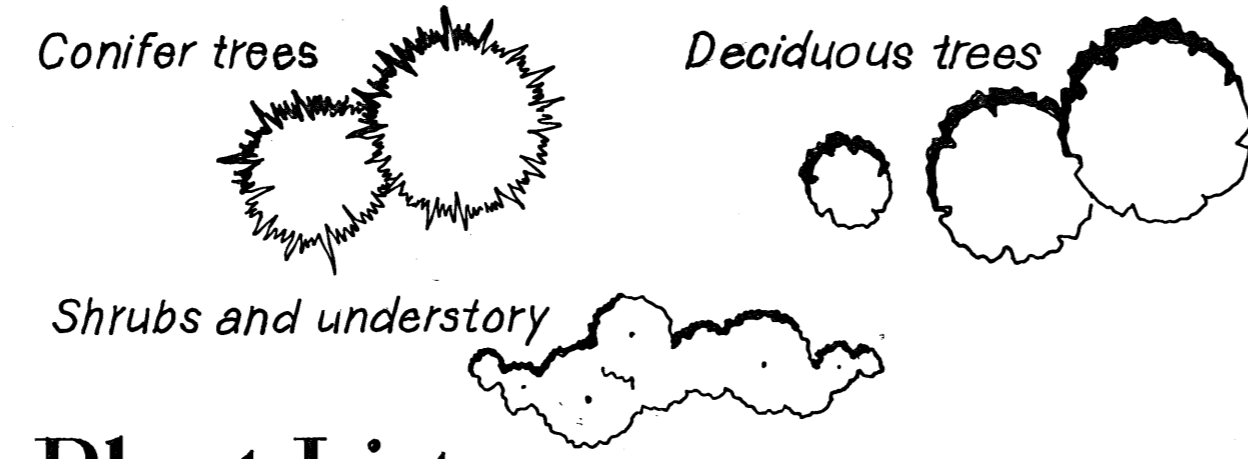
Aspen Valley Entrance in the 1910s

ARCH ROCK ENTRANCE

The 1907 entrance road from El Portal to Yosemite Valley passes between two large boulders forming a naturalistic entrance to the park. In 1925, a bypass was constructed to carry large vehicles around the constricted tunnel; it is now the exit lane. The entrance station and ranger residence were constructed in 1926 to meet the needs of the new "All Year Highway" from Merced.

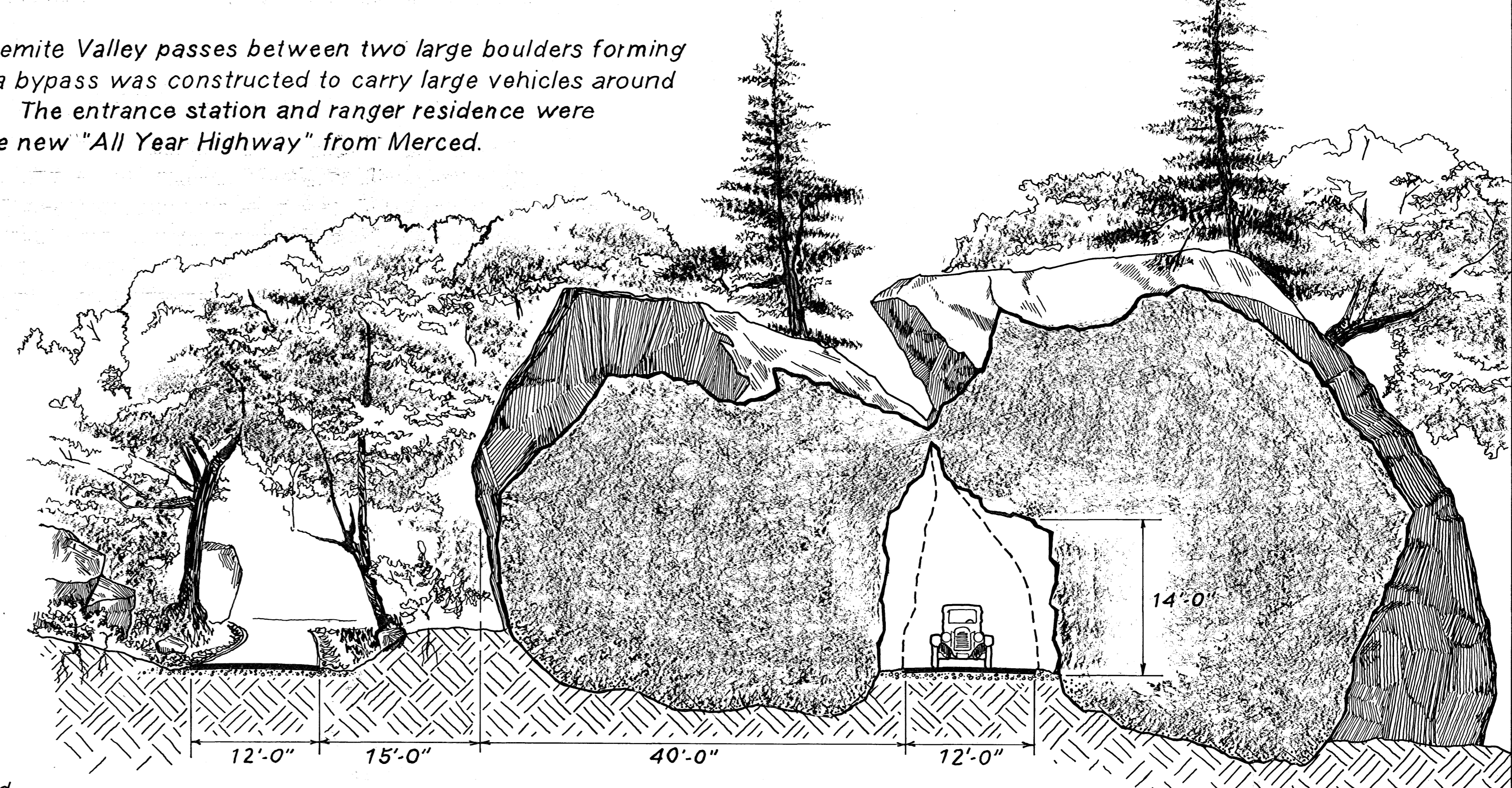


Plan Legend

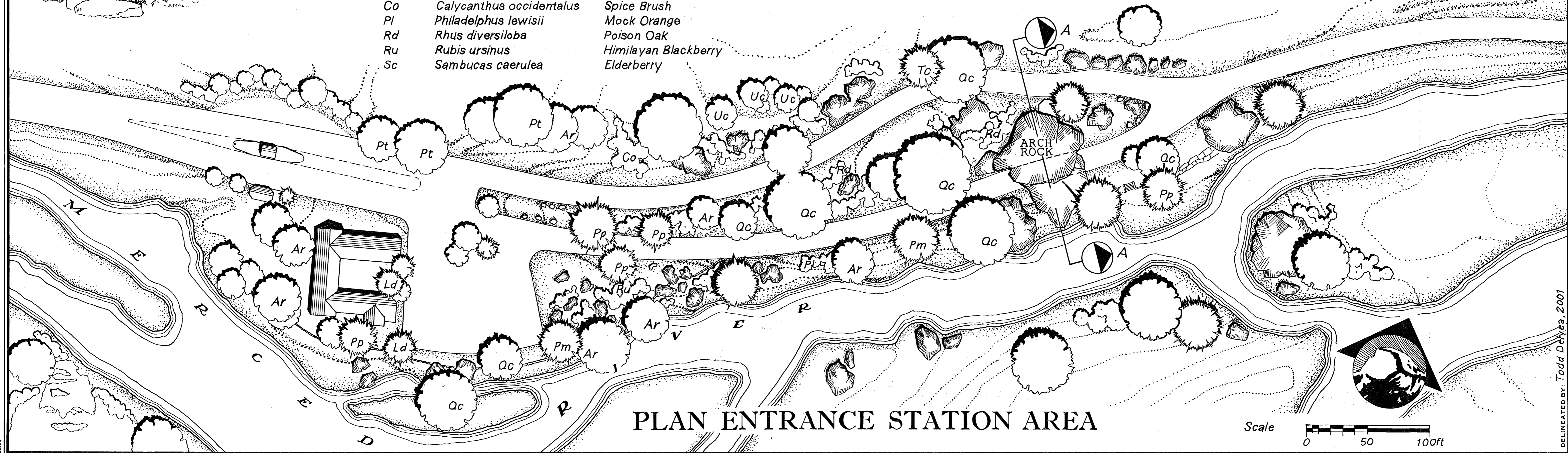
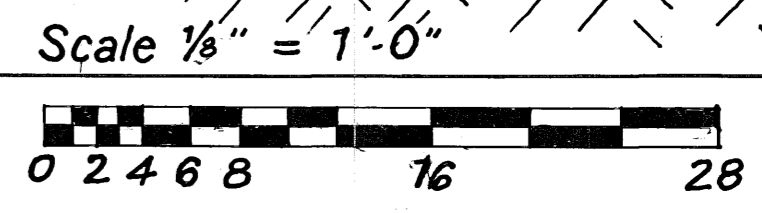


Plant List

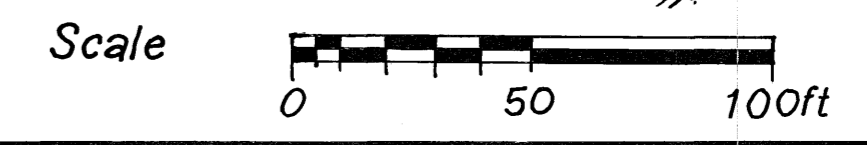
Key	Botanical Name	Common Name
Trees		
Ar	<i>Alnus rhombifolia</i>	White Alder
Ld	<i>Libocedrus decurrens</i>	Incense Cedar
Pm	<i>Pseudotsuga menzeisii</i>	Douglas Fir
Pp	<i>Pinus ponderosa</i>	Ponderosa Pine
Pt	<i>Populus trichocarpa</i>	Black Cottonwood
Qc	<i>Quercus chrysolepis</i>	Canyon live Oak
Uc	<i>Umbellularia californica</i>	California Bay
Tc	<i>Torreya californica</i>	California Nutmeg
Shrubs and understory		
Co	<i>Calycanthus occidentalis</i>	Spice Brush
Pl	<i>Philadelphus lewisii</i>	Mock Orange
Rd	<i>Rhus diversiloba</i>	Poison Oak
Ru	<i>Rubus ursinus</i>	Himalayan Blackberry
Sc	<i>Sambucus caerulea</i>	Elderberry



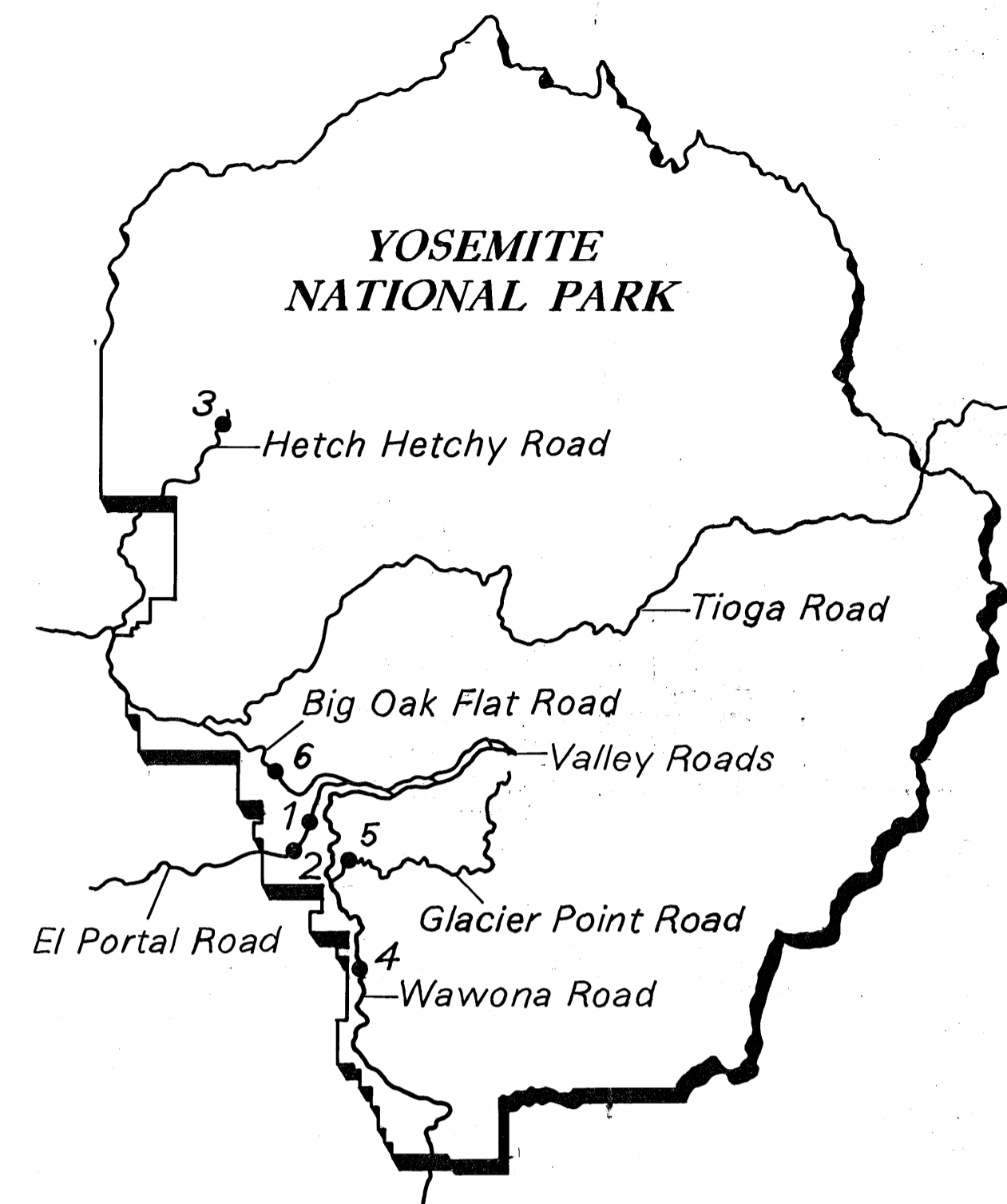
SECTION AA



PLAN ENTRANCE STATION AREA



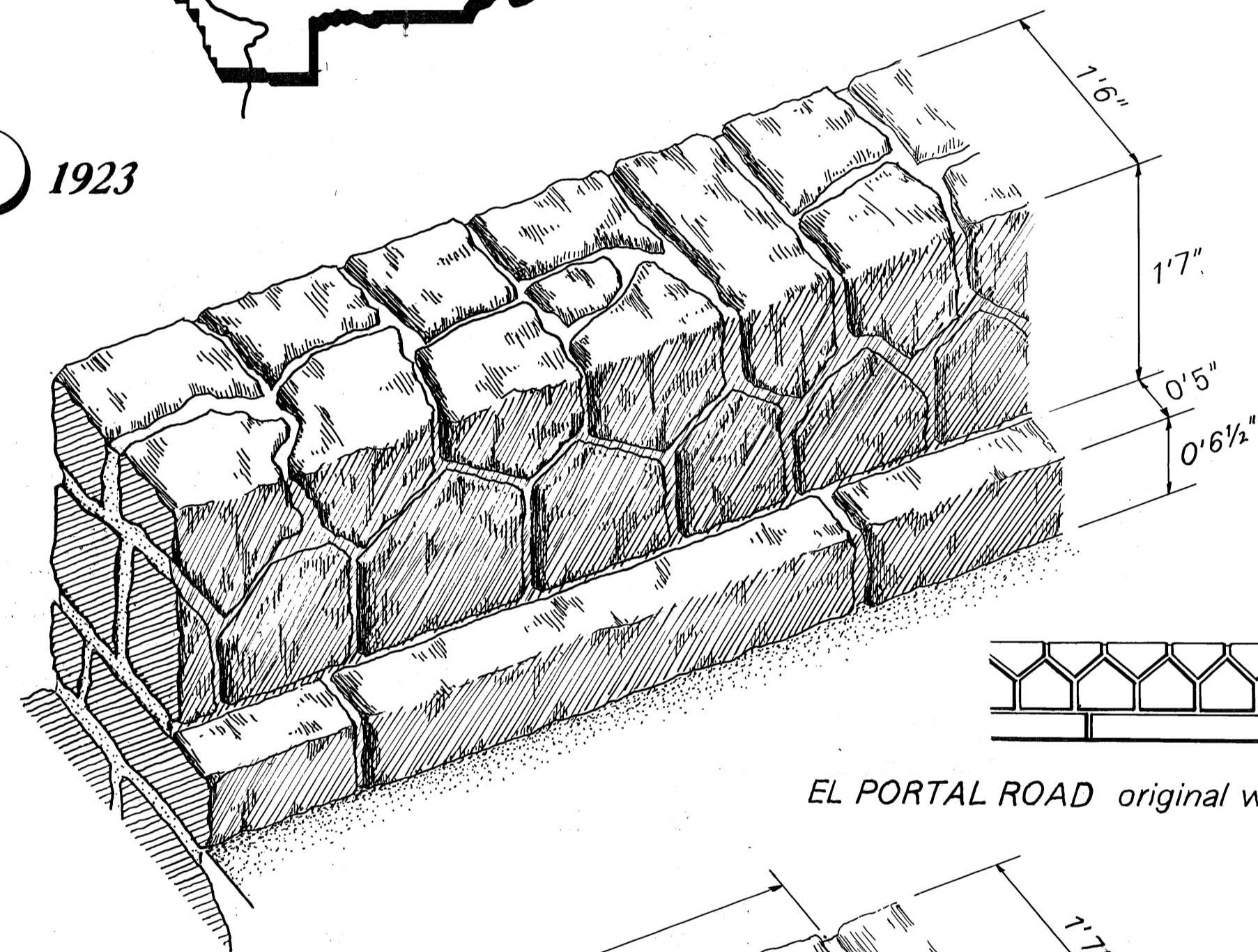
GUARD WALLS



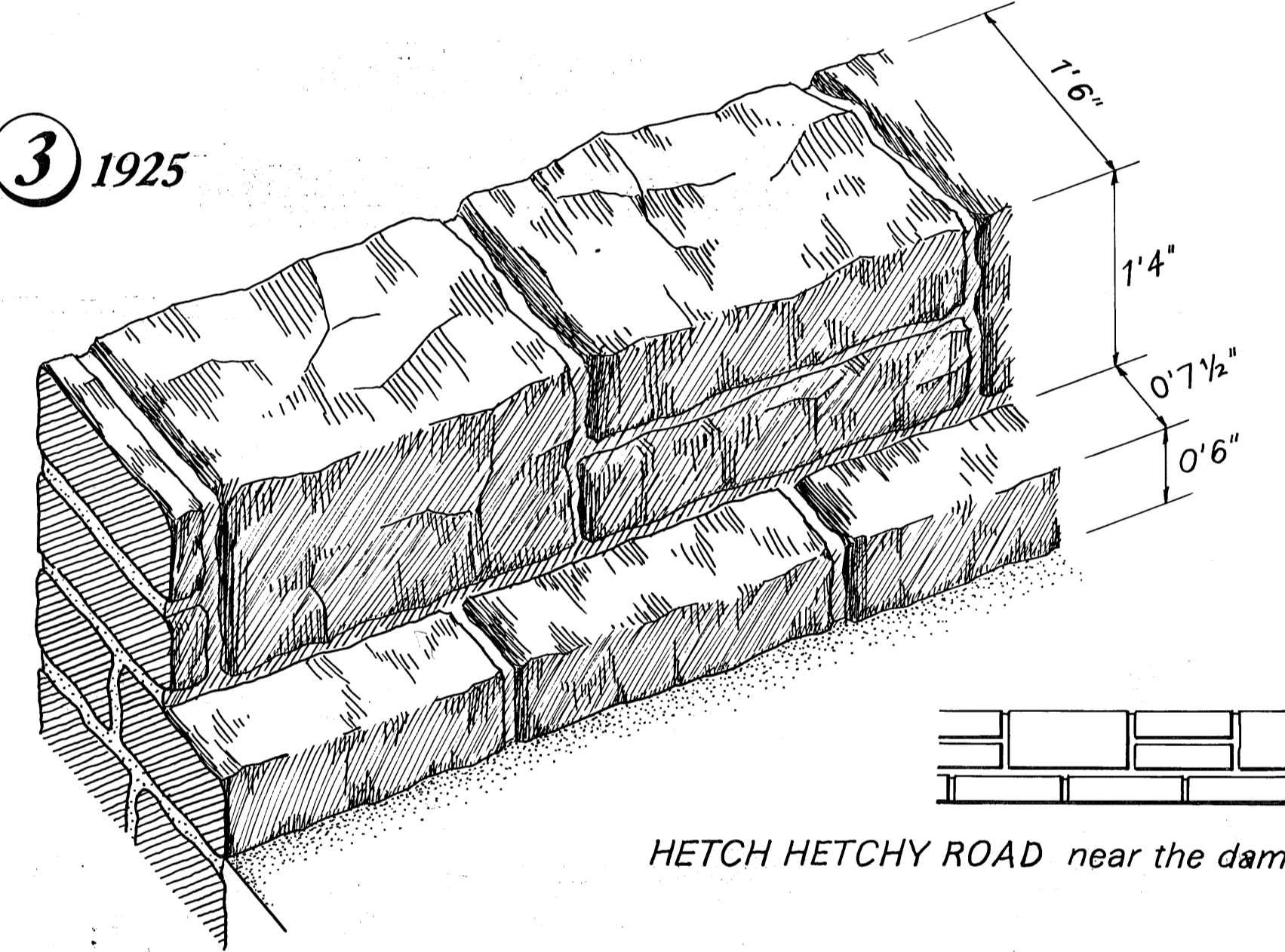
A variety of stone guard walls or parapet was employed to prevent vehicles from plunging off the park roads. Most of the modern motor roads from the 1930s have their own unique styles. The early walls were constructed of native stone, cut and mortared to fit in varying patterns. Some of these guard walls are now being replaced with concrete core walls to meet increasingly stringent safety standards.



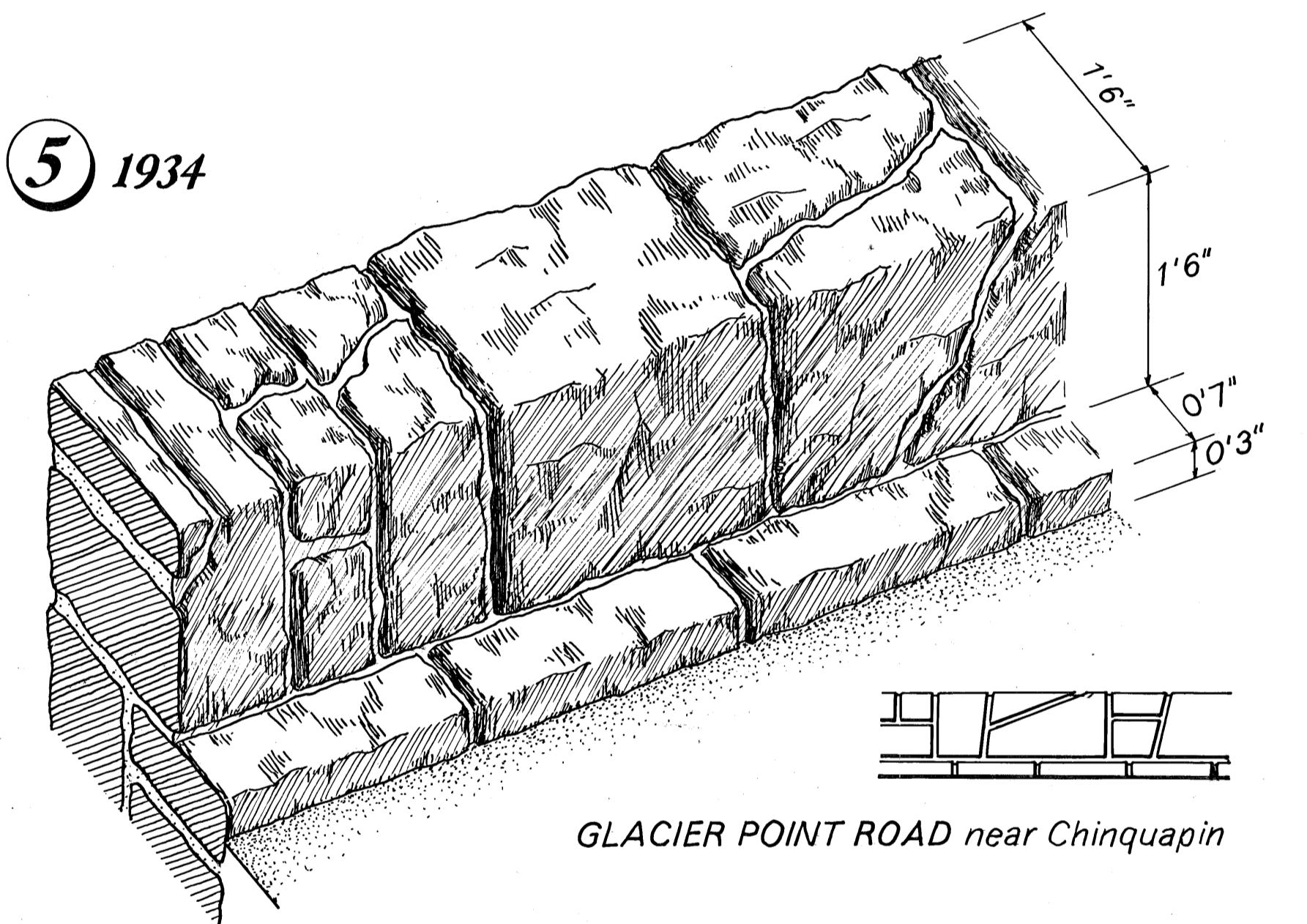
1 1923



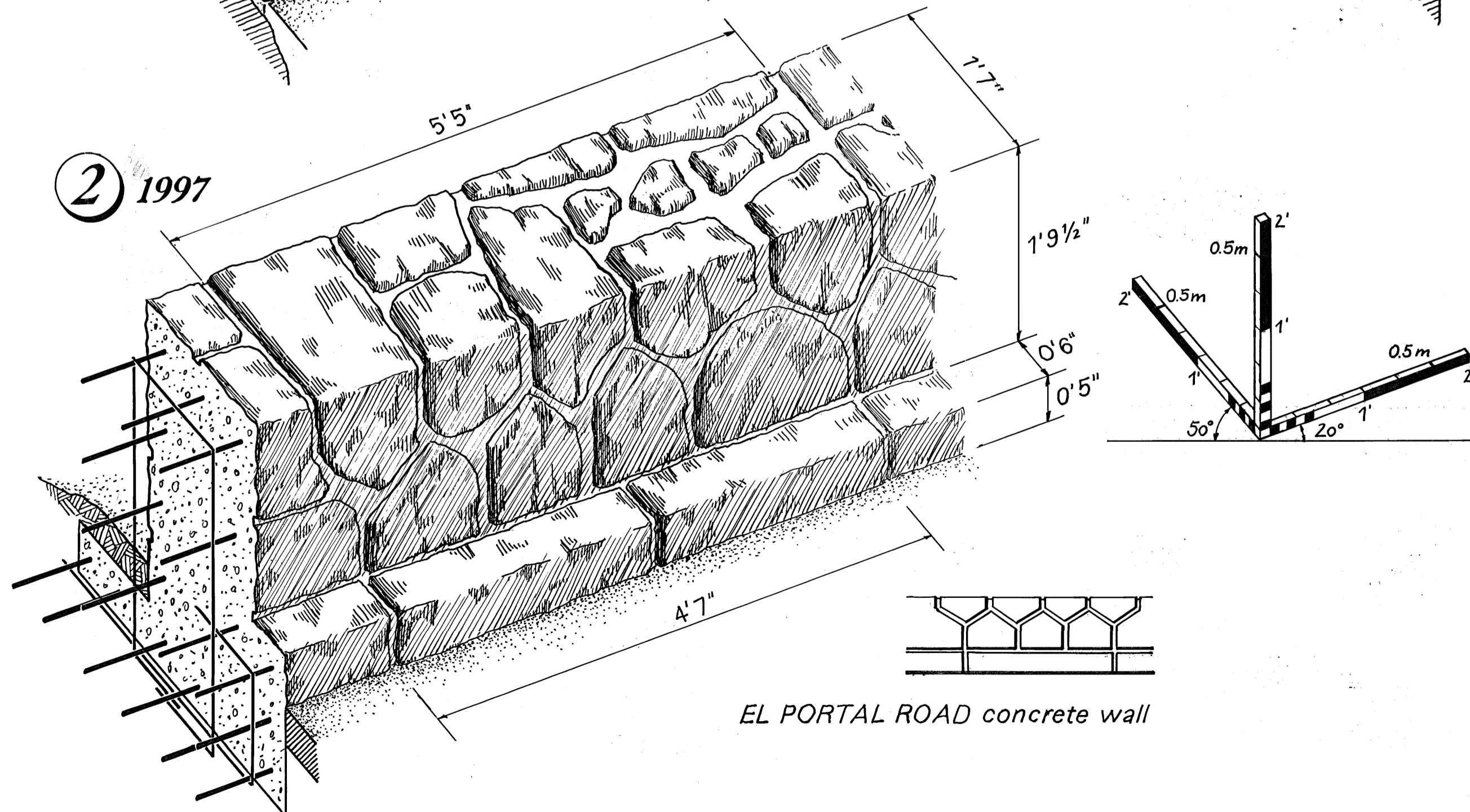
3 1925



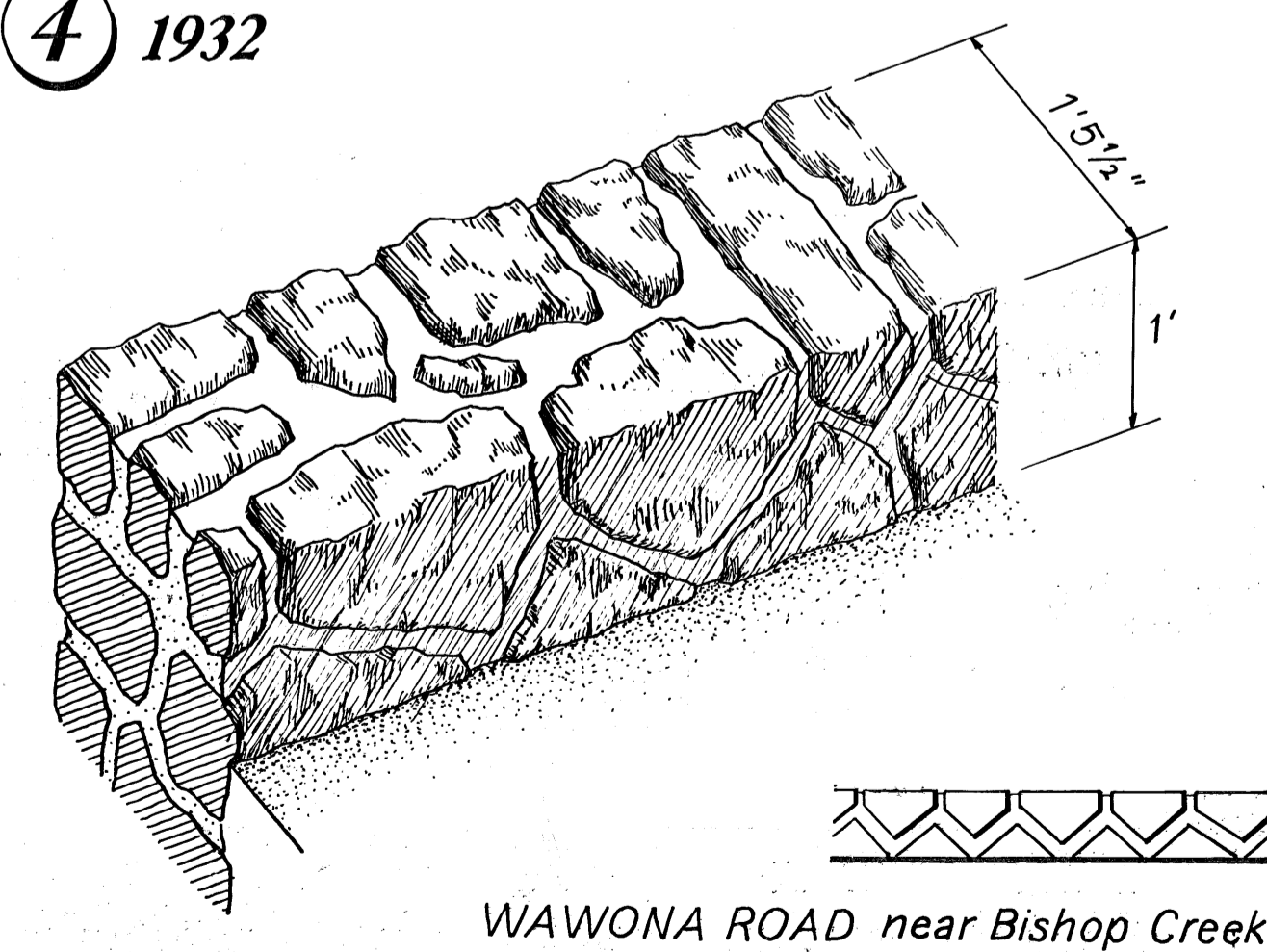
5 1934



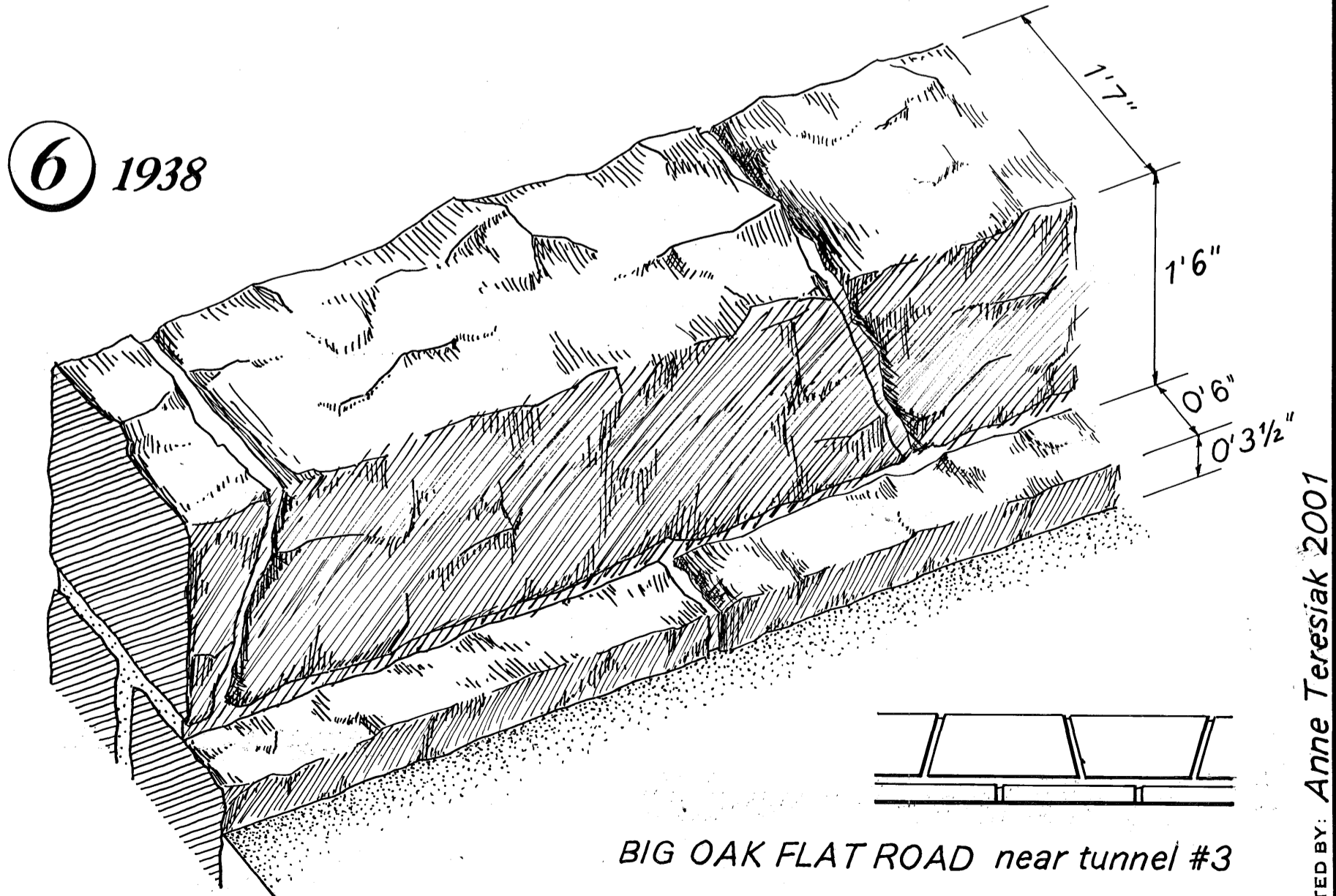
2 1997



4 1932

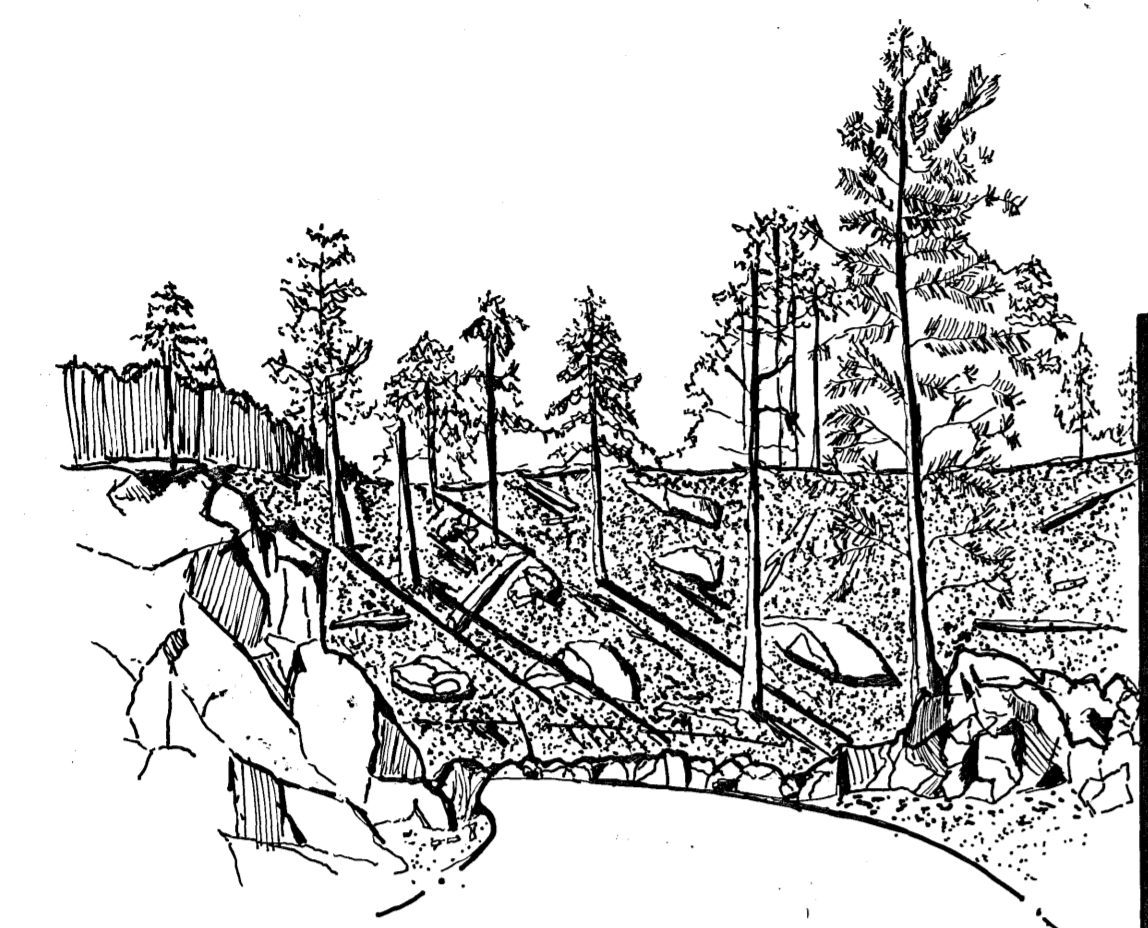


6 1938



ROADSIDE LANDSCAPE

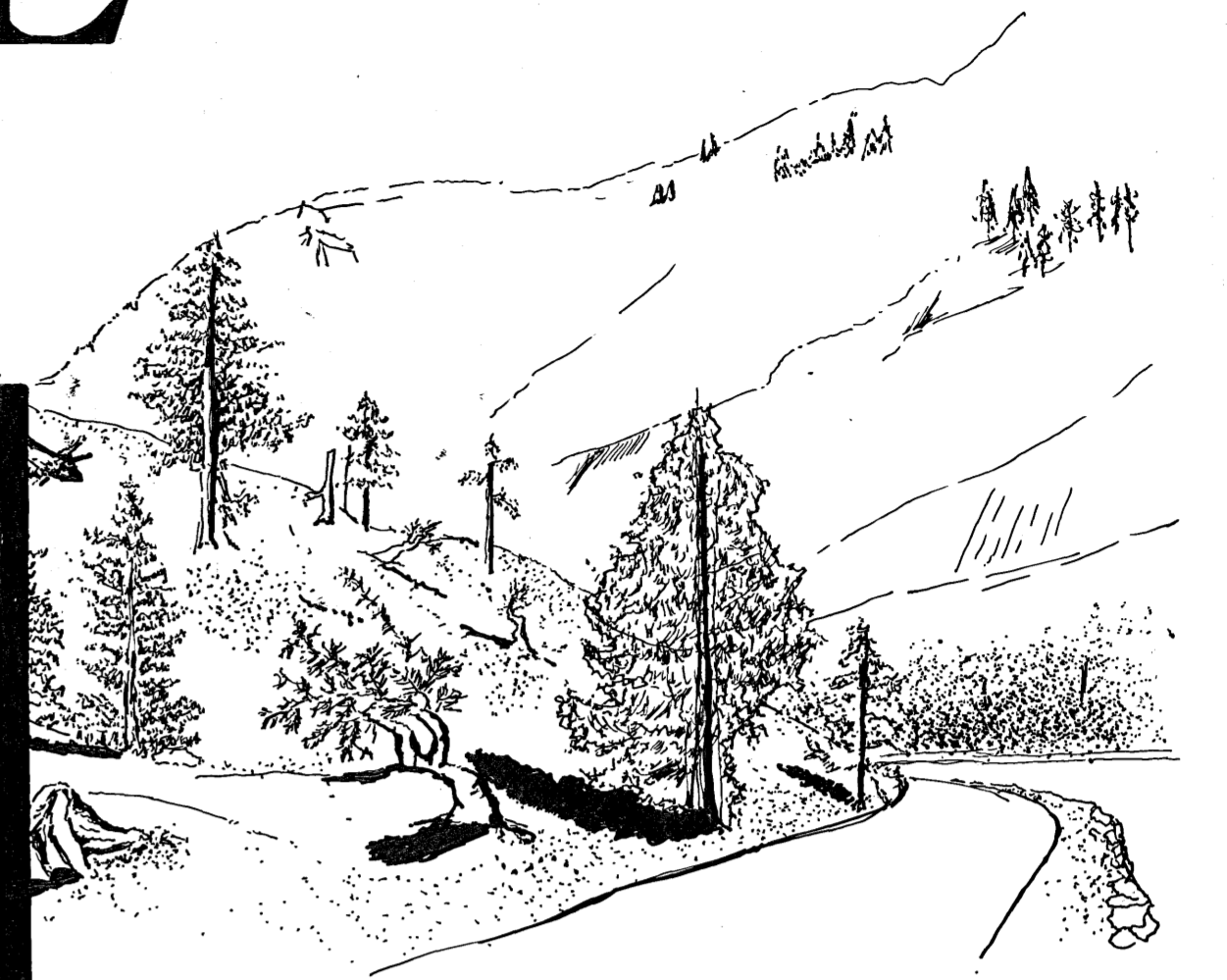
Yosemite's wide range of elevations, from its semi-arid foothills to its snow-capped crest, has produced zone type distribution of its 37 kinds of native trees and hundreds of wildflowers. The individual roads are often distinguished by characteristic trees representing various plant communities.



Hetch Hetchy Road

40'-70'
Range: up to 3000'
Foothill Pine
Pinus sabiniana

80'-130'
Range: 5200'-9500'
Jeffrey Pine
Pinus jeffreyi



Tioga Road



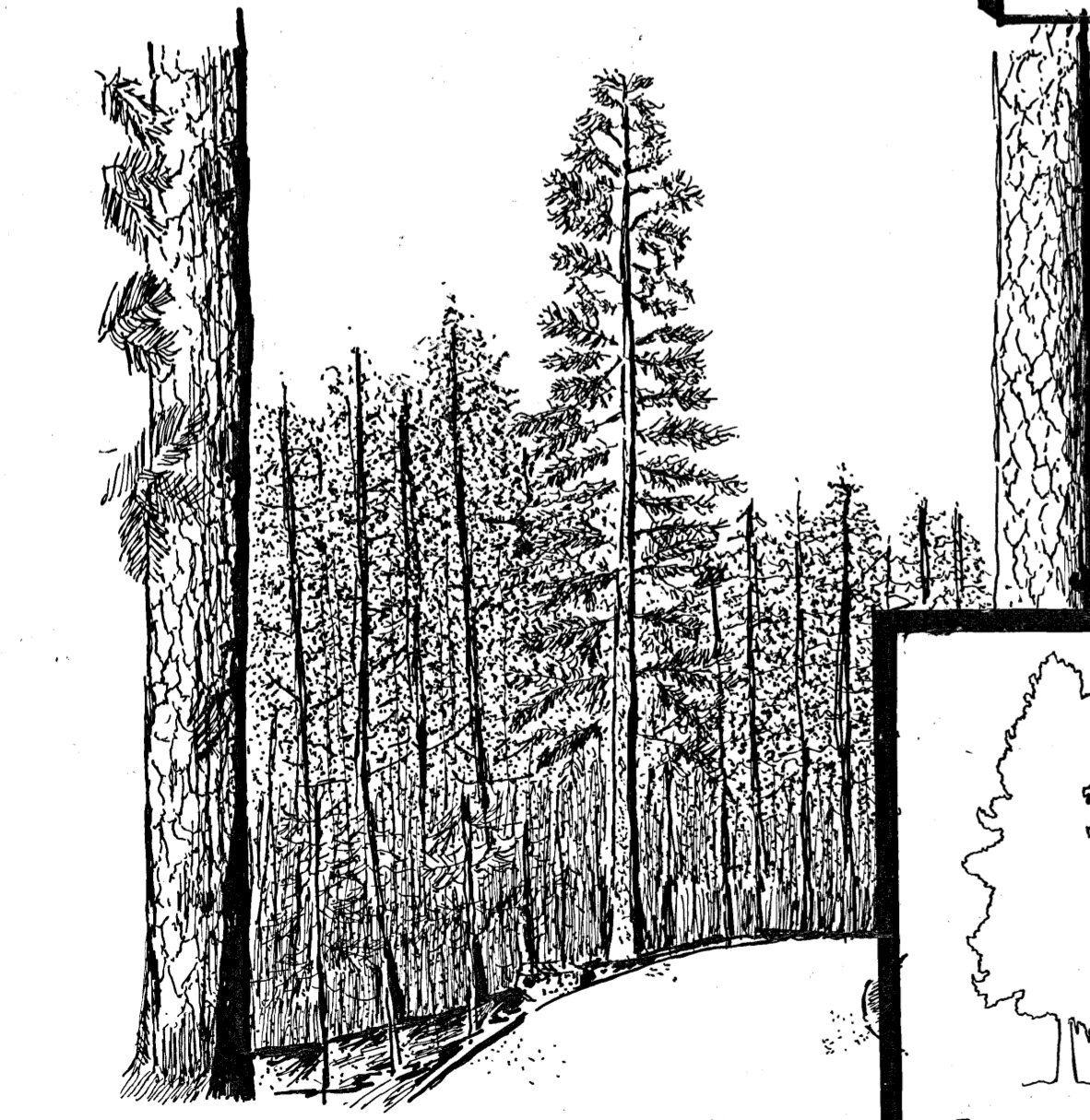
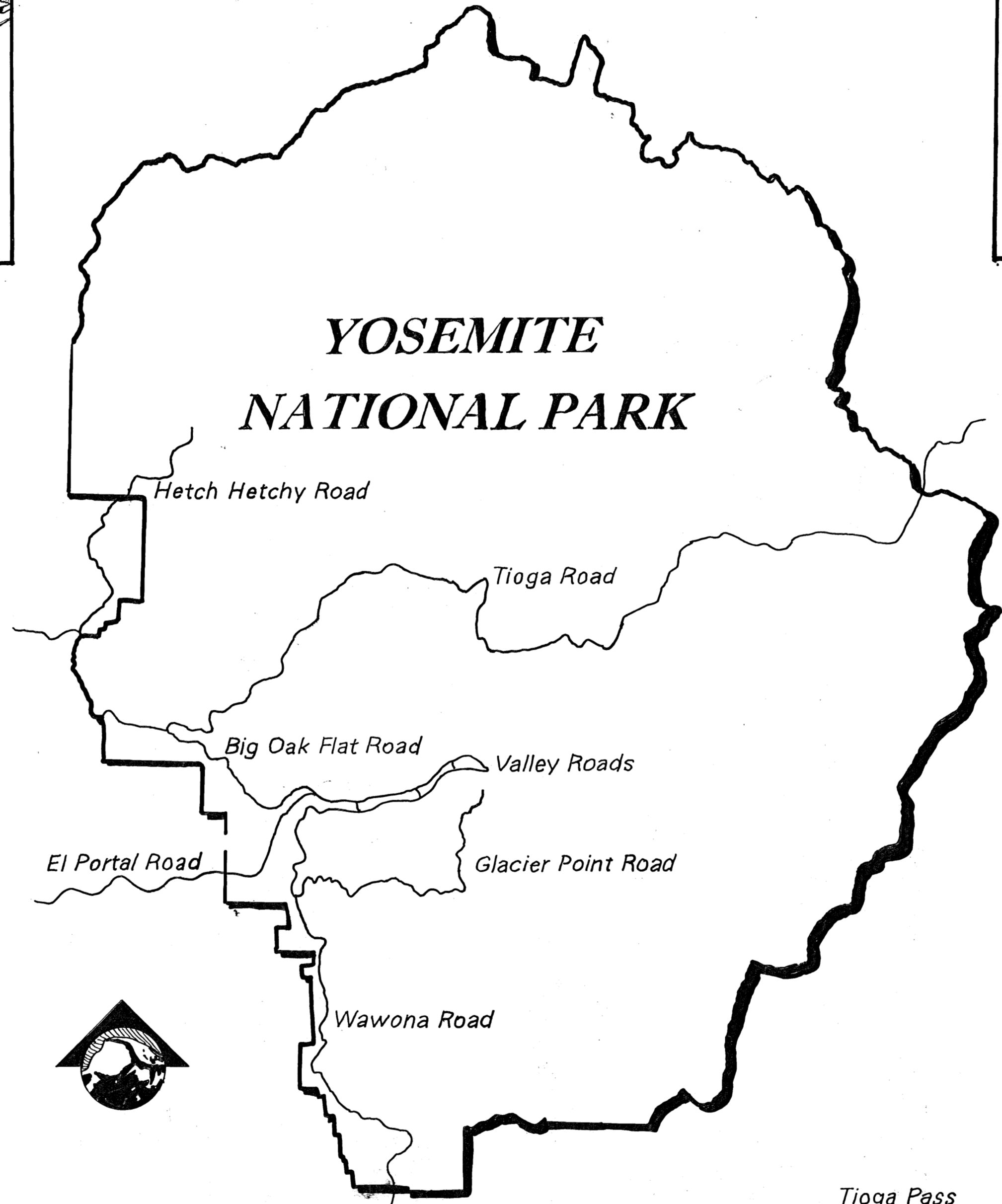
El Portal Road

20'-80'
Range: 3500'-6500'
Canyon Live Oak
Quercus chrysolepis

30'-80'
Range: up to 7000'
California Black Oak
Quercus kelloggii



Valley Roads



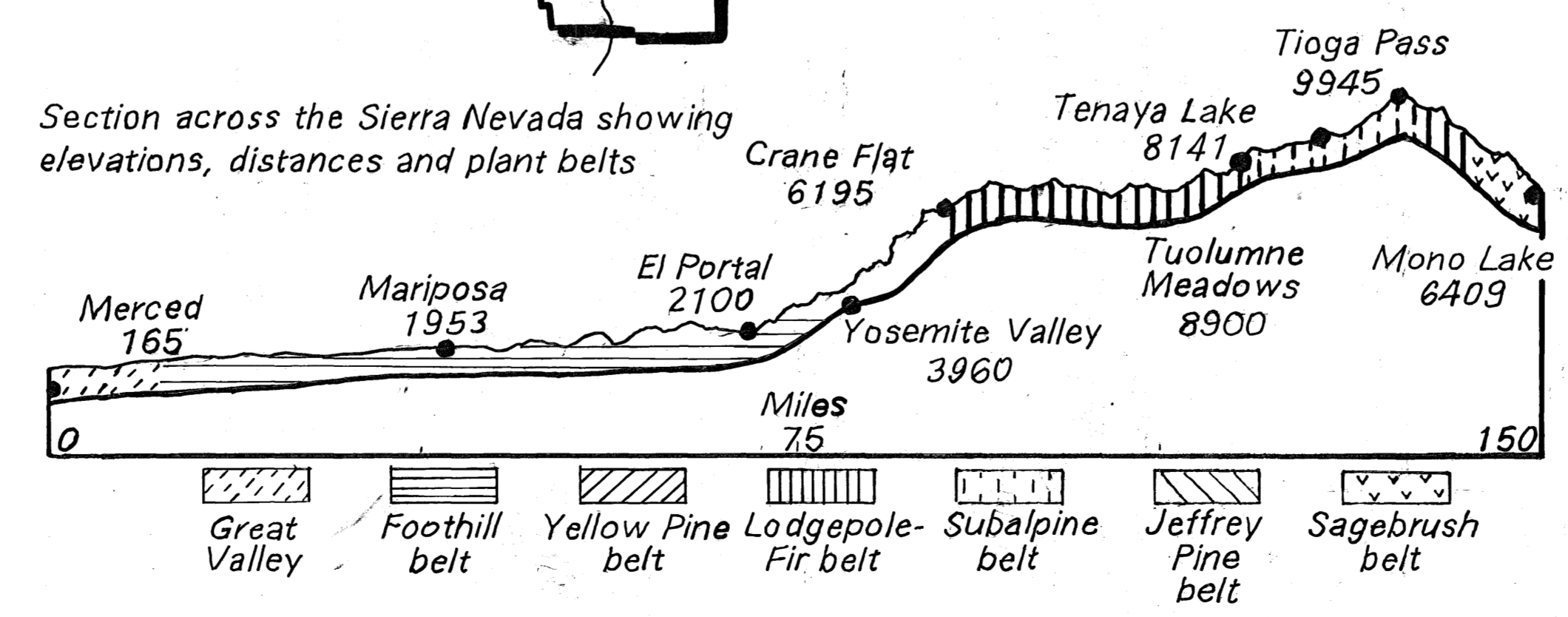
Wawona Road

60'-180'
Range: up to 7000'
Pacific Ponderosa Pine
Pinus ponderosa

60'-160'
Range: 6000'-9500'
California Red Fir
Abies magnifica



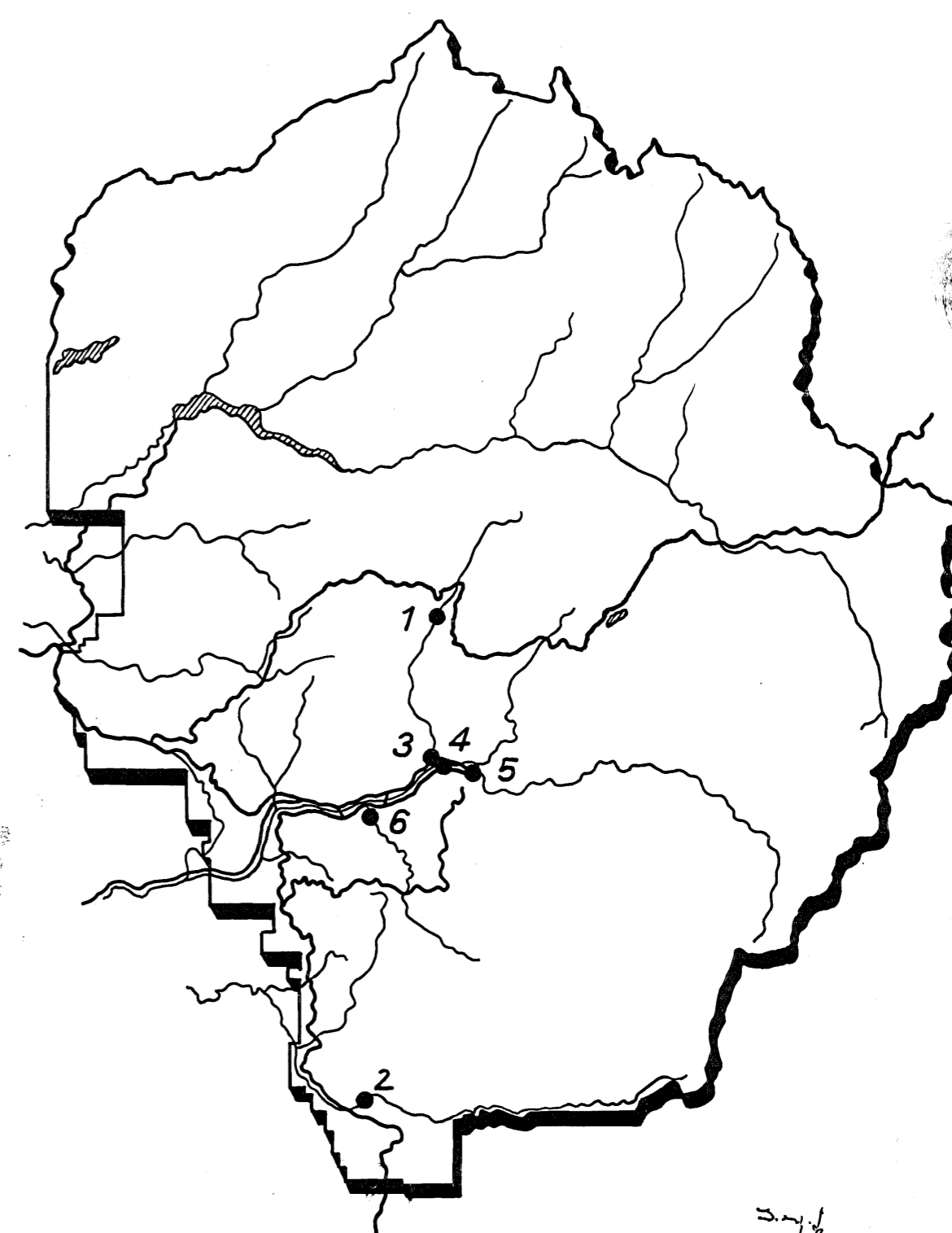
Glacier Point Road



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 YOSEMITE VICINITY
 DELINEATED BY: Elliott T. Harwell 2001
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 IF REPRODUCED, PLEASE CREDIT: HISTORIC AMERICAN ENGINEERING RECORD, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING

BRIDGE EVOLUTION

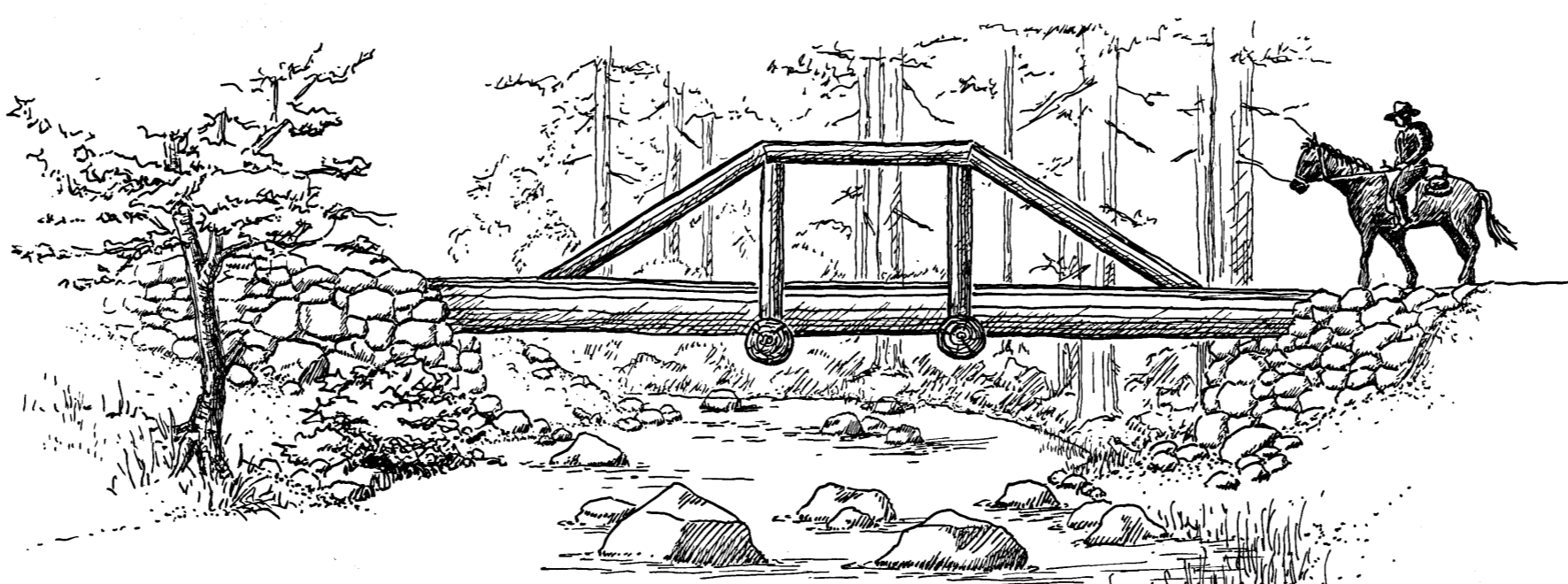
19th Century - 1920 s



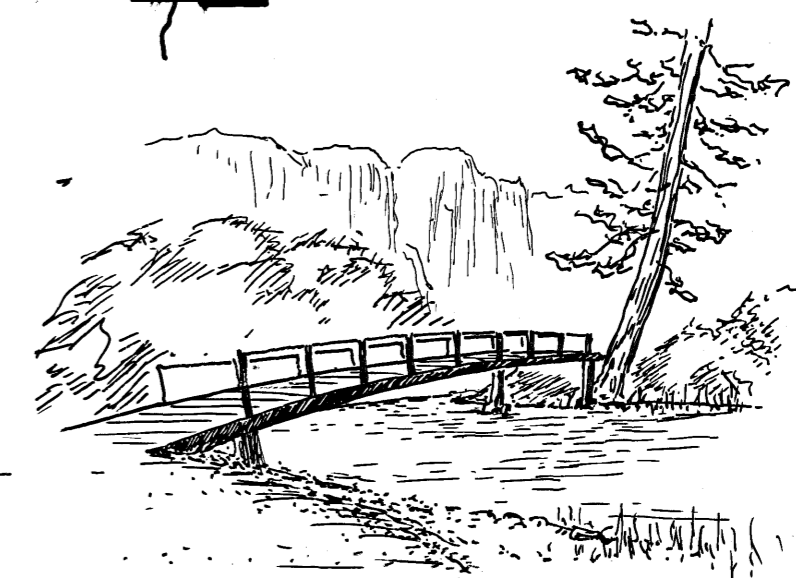
Yosemite's earliest bridges were simple wooden structures, easily erected from locally available materials. Over time, more complex trusses were erected by the military, followed by the first reinforced concrete spans. The first rustic style bridges were erected in 1913.

1 Log Bridges

The earliest bridges were built of large logs and primarily used as footbridges. Simple queen post trusses were used for crossing short spans with heavier loads. This 3-panel bridge over Yosemite Creek was a modification of the king post truss with a horizontal chord for reinforcement.



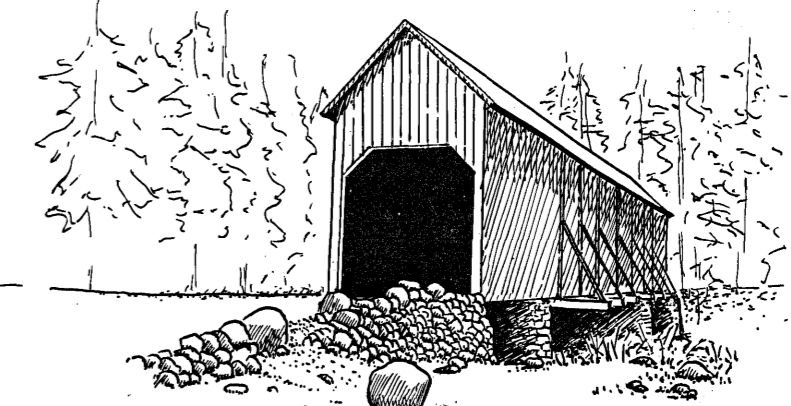
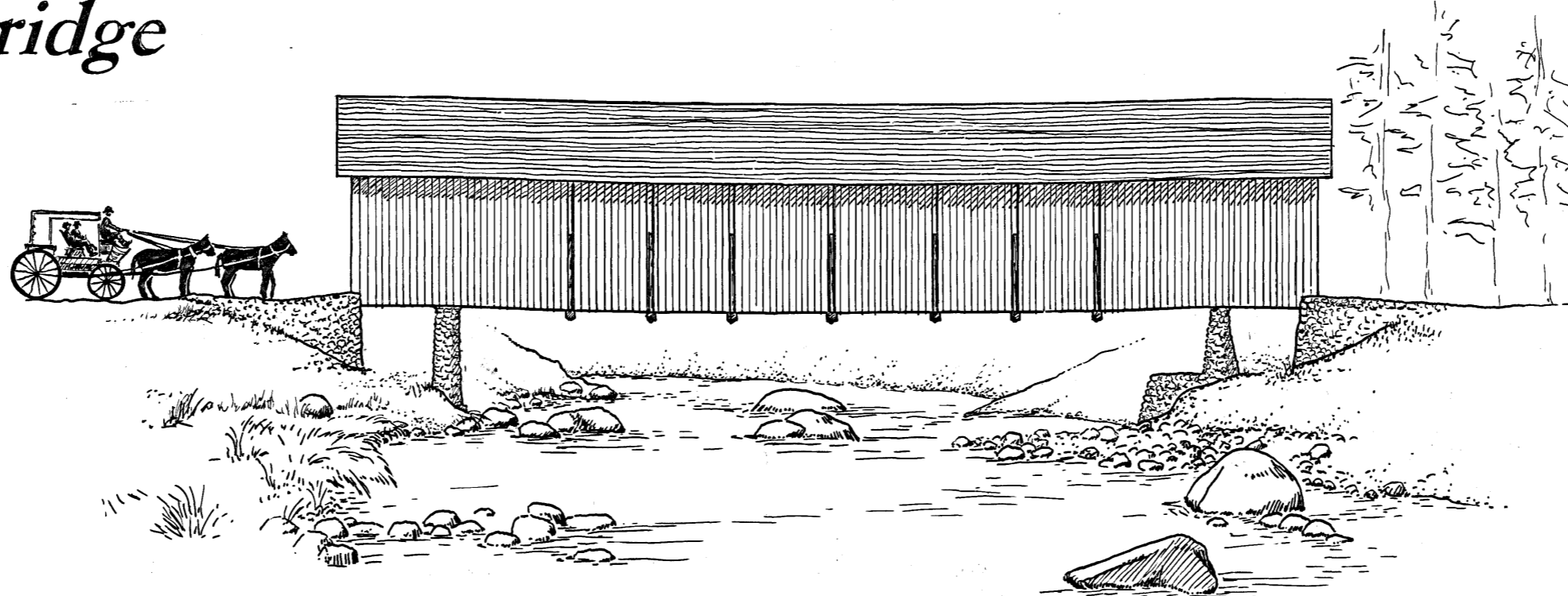
Early bridge over Yosemite Creek



Simple log bridge in Yosemite Valley

2 Wawona Covered Bridge

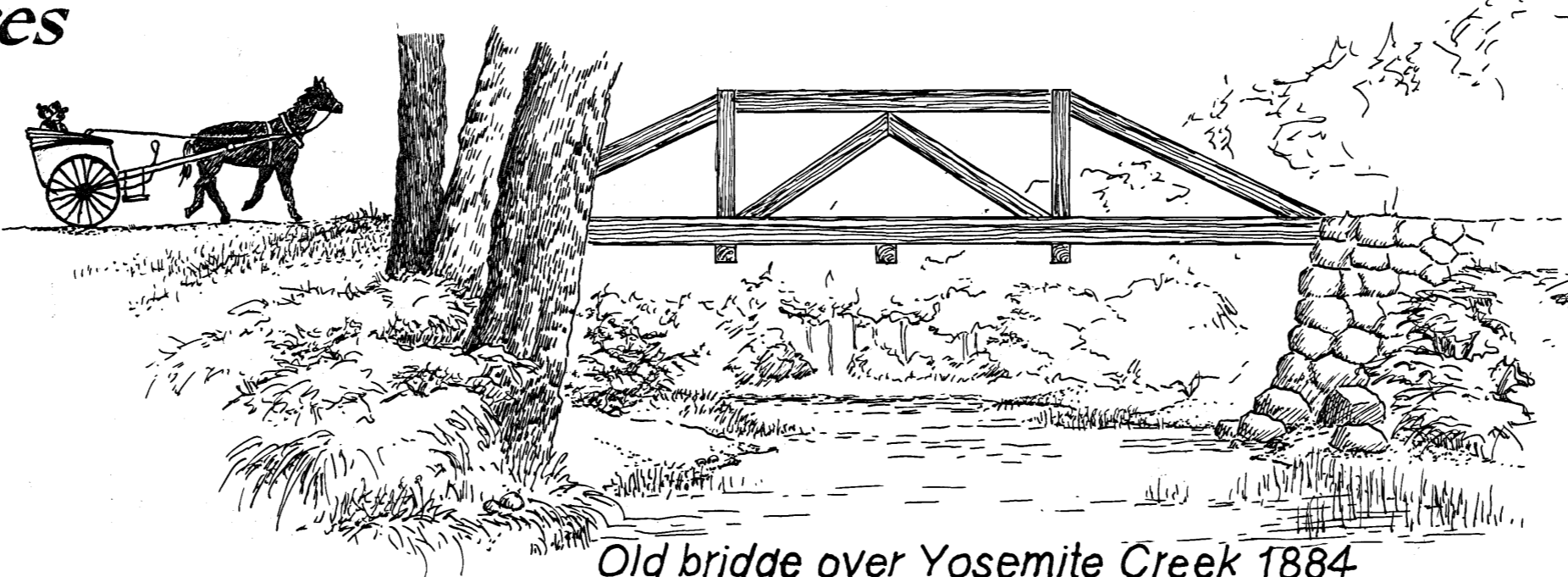
A covered bridge protects the interior wooden truss system from decay. The 1868 open deck bridge at Wawona was covered in 1878 and remains the only covered bridge in Yosemite. Outside the park but close to the boundary there was another covered bridge across the South Fork Tuolumne River.



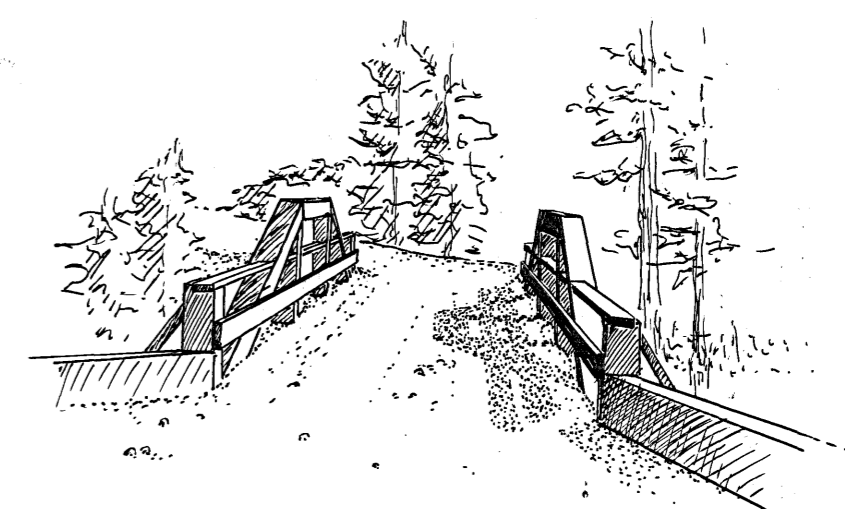
Wawona Covered Bridge 1878

3 Timber Truss Bridges

As spans grew longer and vehicle weights increased, more complex truss systems were employed. Such bridges spanned across Yosemite Creek and the Merced River in Yosemite Valley. Also the old Cascade Creek Bridge built in 1907 was timber truss construction.



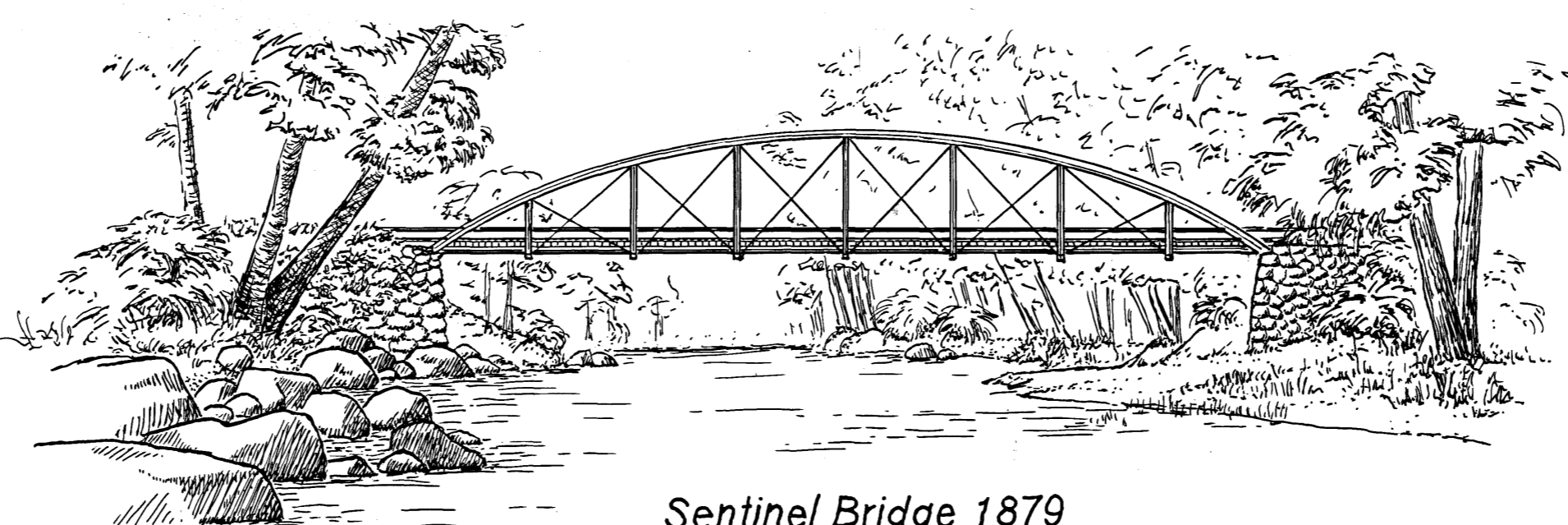
Old bridge over Yosemite Creek 1884



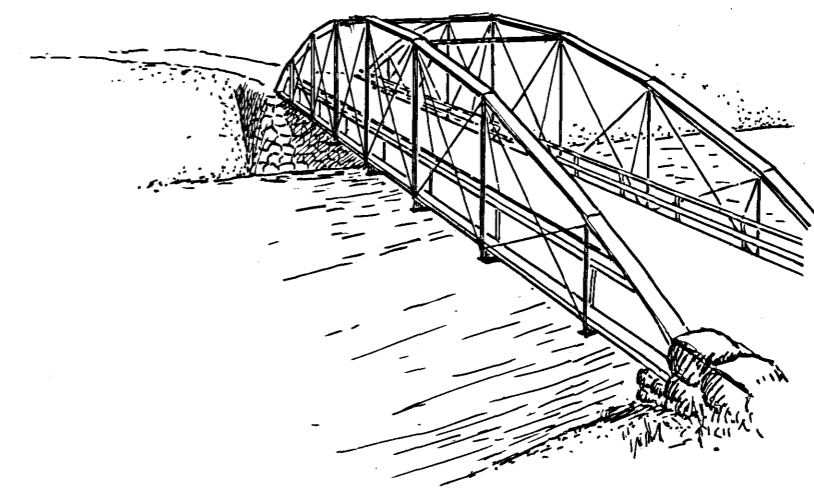
Old Cascade Creek Bridge 1907

4 Steel Truss Bridges

More expensive than wooden trusses, steel bridges were much more durable and could carry heavier loads. The second Sentinel Bridge - an early representative of this group - was erected in 1879 as an iron truss. Built in 1915, the old El Capitan Bridge was a combined timber and steel truss system.

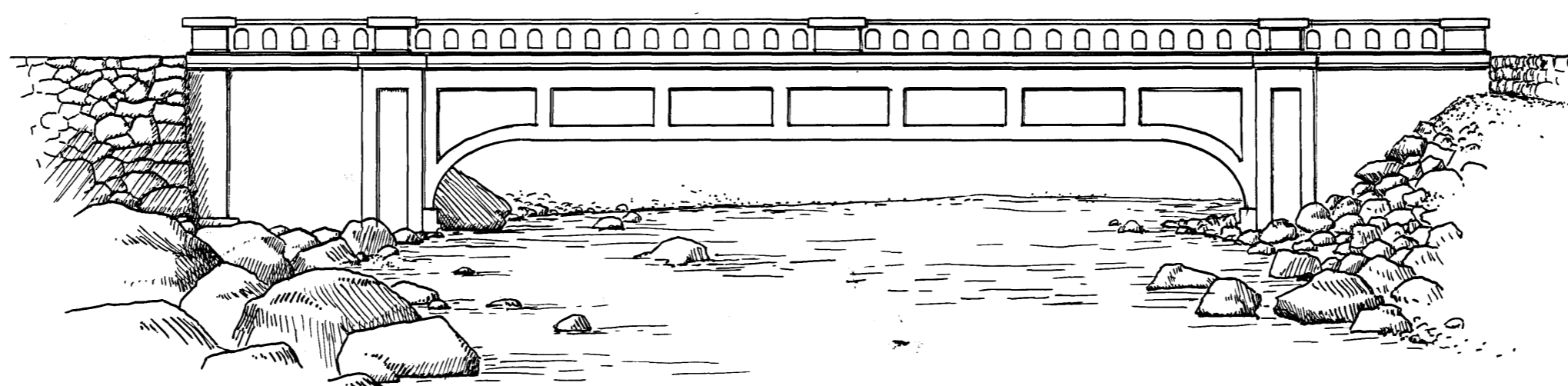


Sentinel Bridge 1879

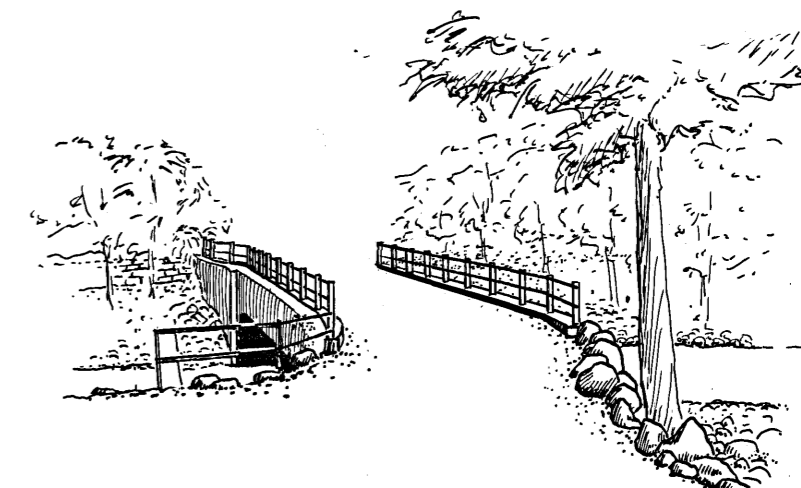


5 Reinforced-Concrete Bridges

By 1920, concrete bridges had made their appearance on the Valley floor. Over time, most of them were replaced, like the Old Stoneman Bridge & the Old Sentinel Bridge. One of the earliest concrete bridges was erected in 1921 at Happy Isles. The original concrete railing was later replaced by a Mission 66 railing.



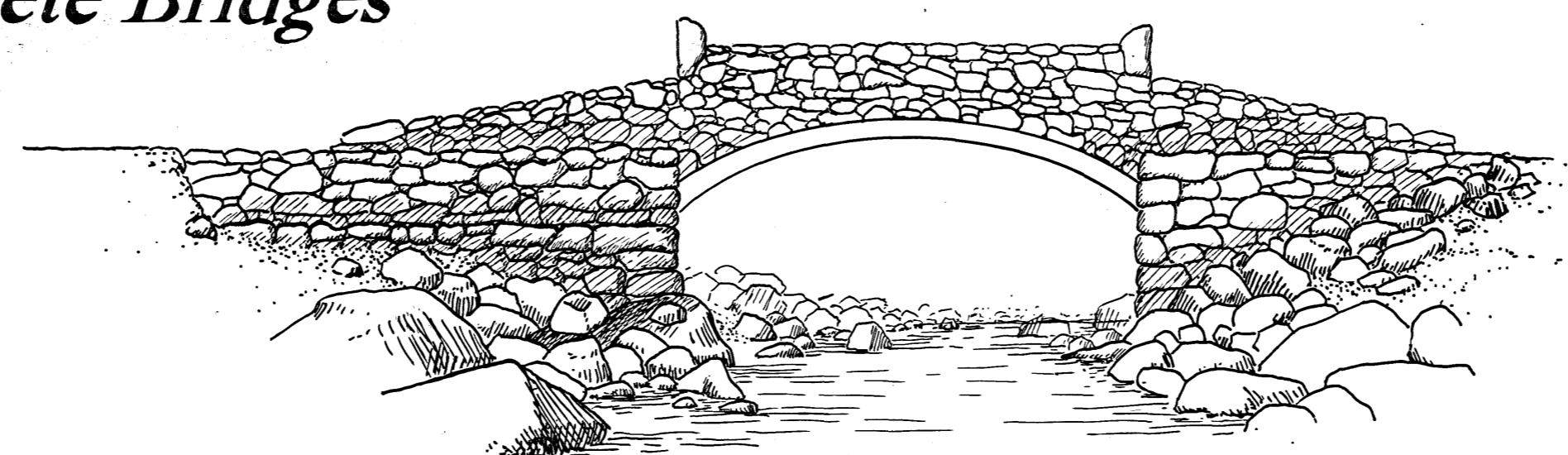
Old Happy Isles Bridge 1921



present state

6 Early Rustic Concrete Bridges

By facing three simple reinforced concrete bridges at Bridalveil Falls with stone, the military set the precedent for rustic bridge design in 1913.



Bridalveil Fall Bridge #1 1913

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YOSEMITE VICINITY

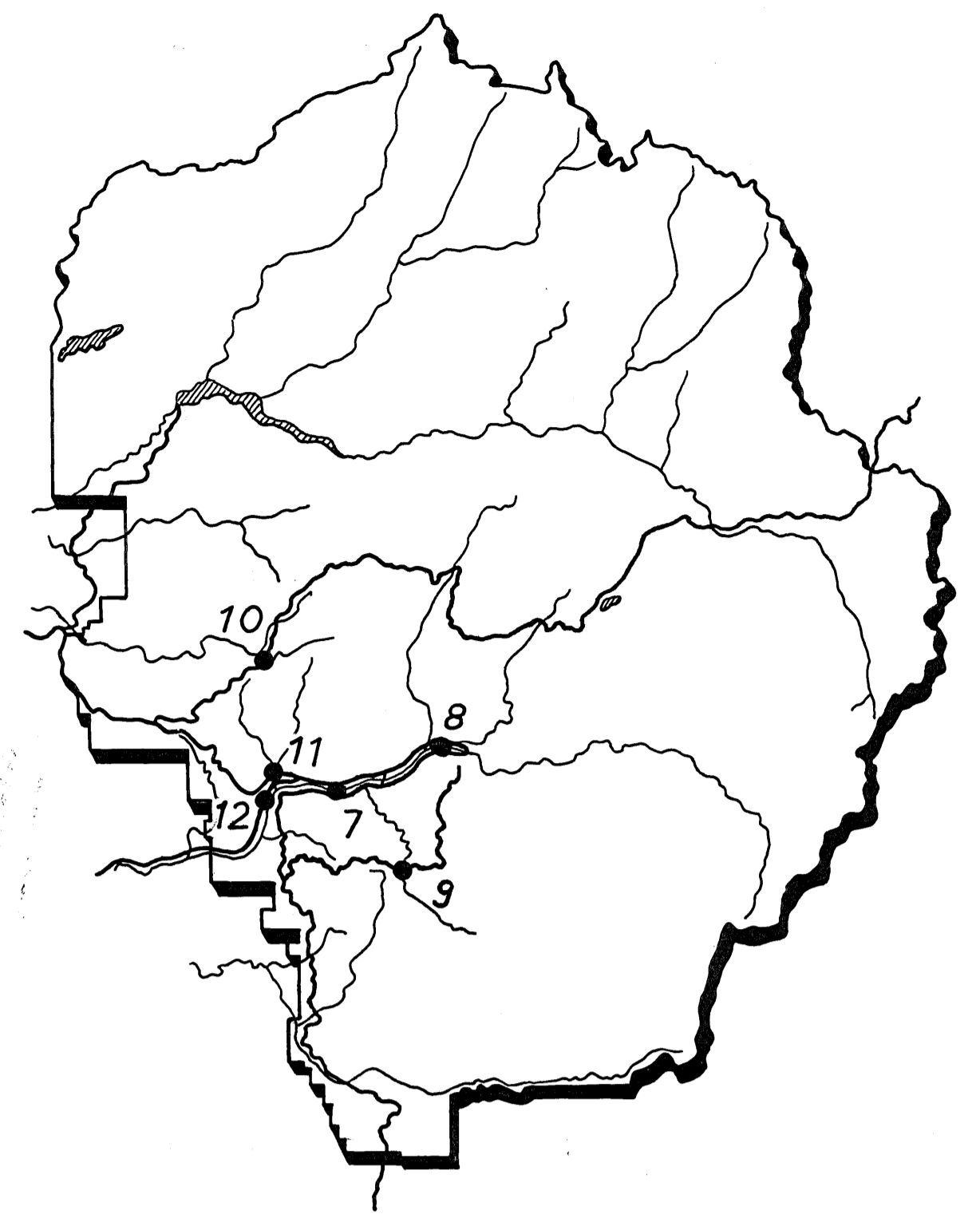
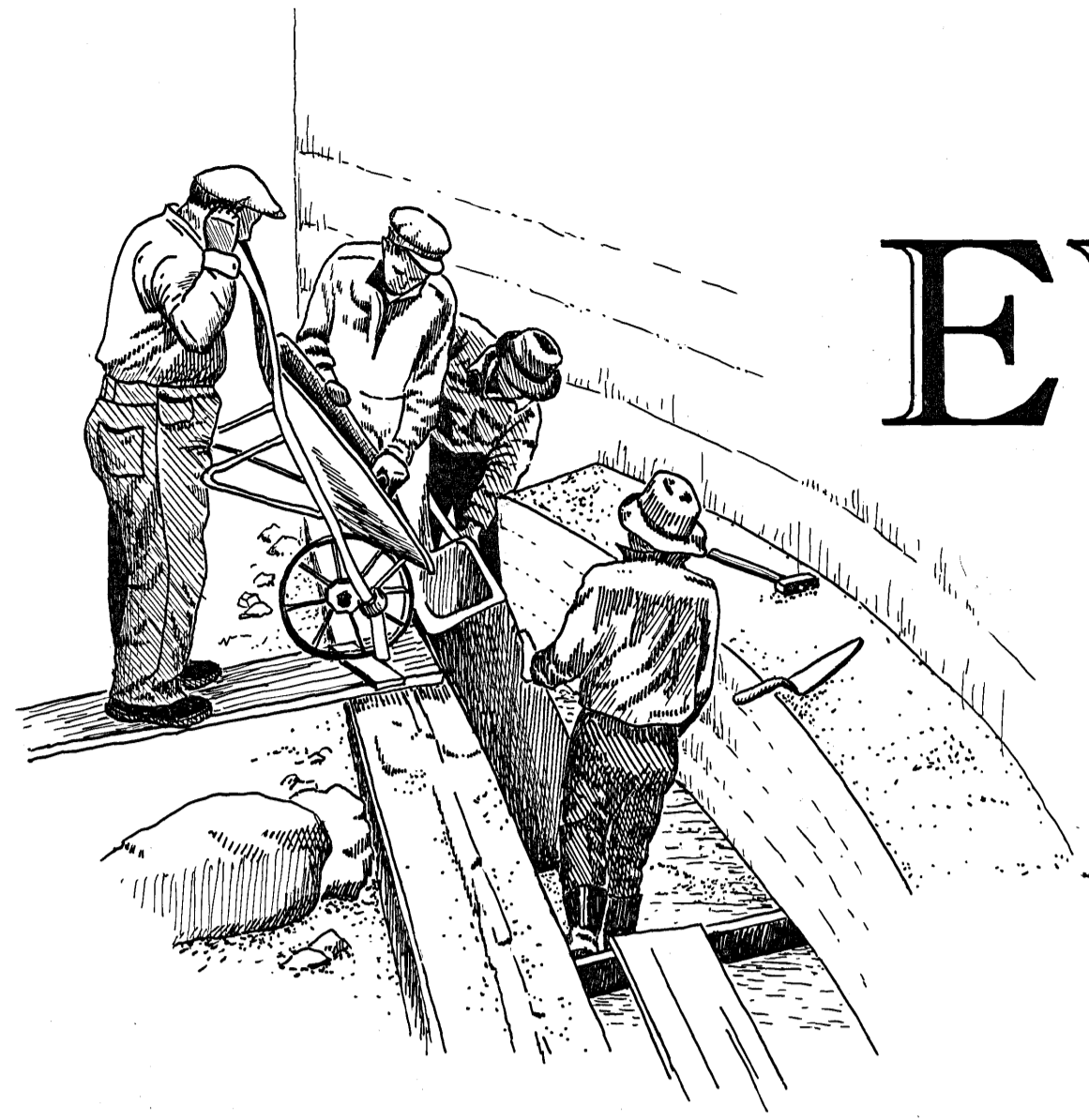
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BRIDGE EVOLUTION

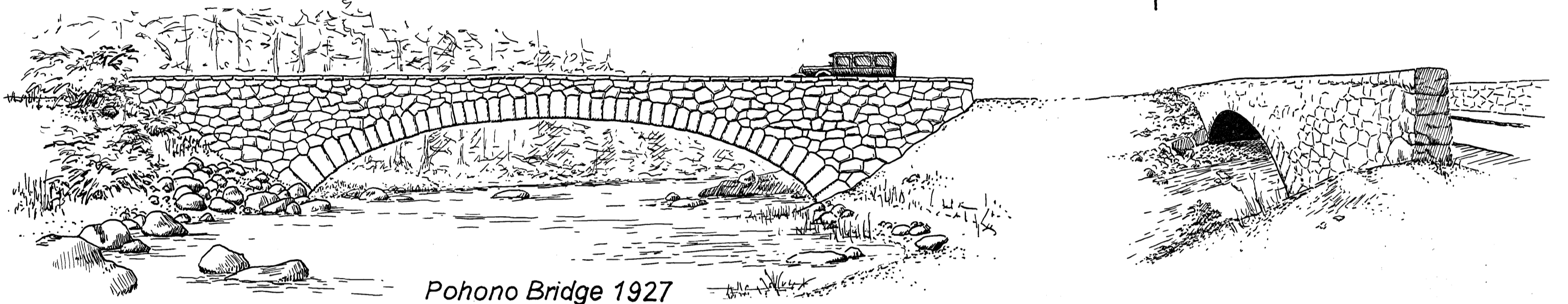
1920 s - Present



In the 1920s, the National Park Service embraced the rustic style, characterized by the use of native materials, but would employ more modern designs where rustic spans were inappropriate. Today's bridges reflect a revival of earlier rustic design.

7 Rustic Stone Arched Bridges

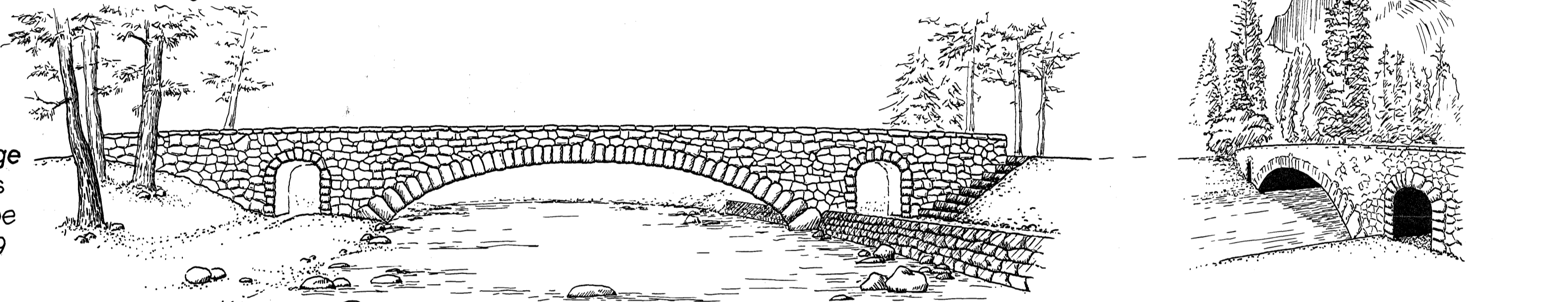
Most of the Valley bridges were graceful arches faced in native stone and with large ring stones defining the arch. The first one was Yosemite Creek Bridge built in 1921. It was followed by Pohono Bridge, Tenaya Creek Bridge, Ahwanee Bridge and Sugar Pine Bridge, which were designed in a plan for five bridges in 1927.



Pohono Bridge 1927

8 Rustic Arches with Subways

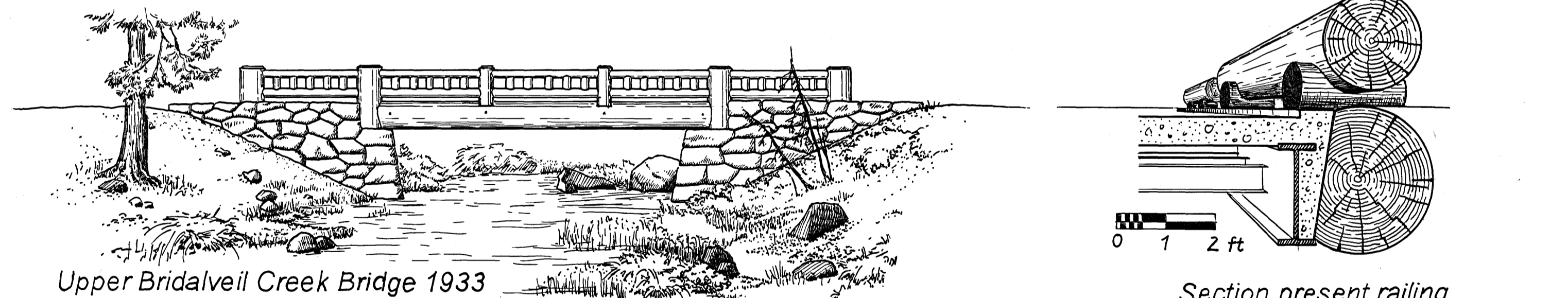
Several of the Valley bridges incorporated tunnels or subways to accommodate passage of foot and bridle trails. The first of this style was Clark's Bridge built in 1928 as one of the five bridges contract of 1927. It was followed by the erection of Happy Isles Bridge in 1929 and Stoneman Bridge in 1932.



Clark's Bridge 1928

9 Rustic Steel Girder Bridges

In an interesting rustic variant, massive logs were bolted to bridges to conceal their interior steel girder construction. Both Upper Bridalveil Creek Bridge and El Capitan Bridge are still in use, while Upper Yosemite Creek Bridge and South Fork Merced River Bridge are condemned. Over time, all of them lost their original railing.

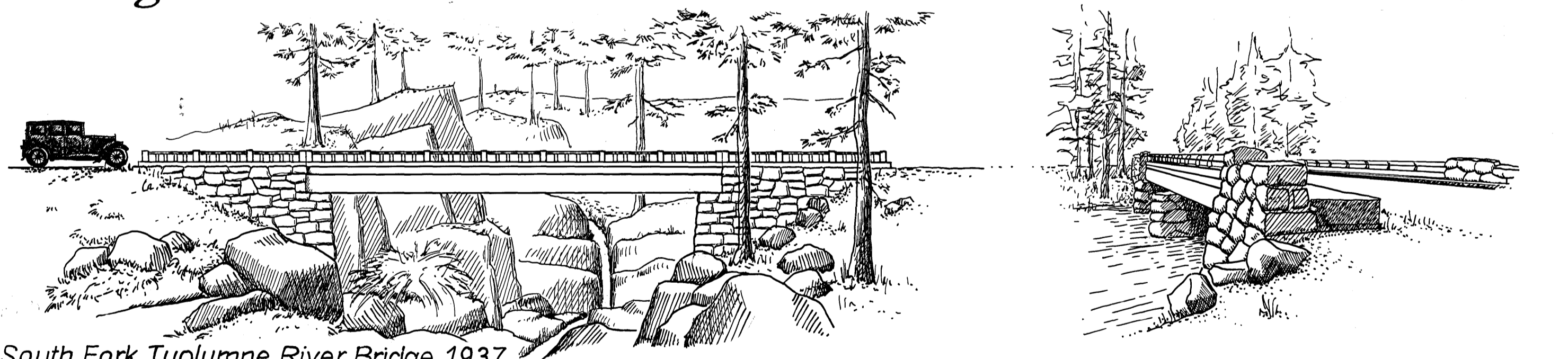


Upper Bridalveil Creek Bridge 1933

Section present railing

10 Concrete Girder Deck Bridges

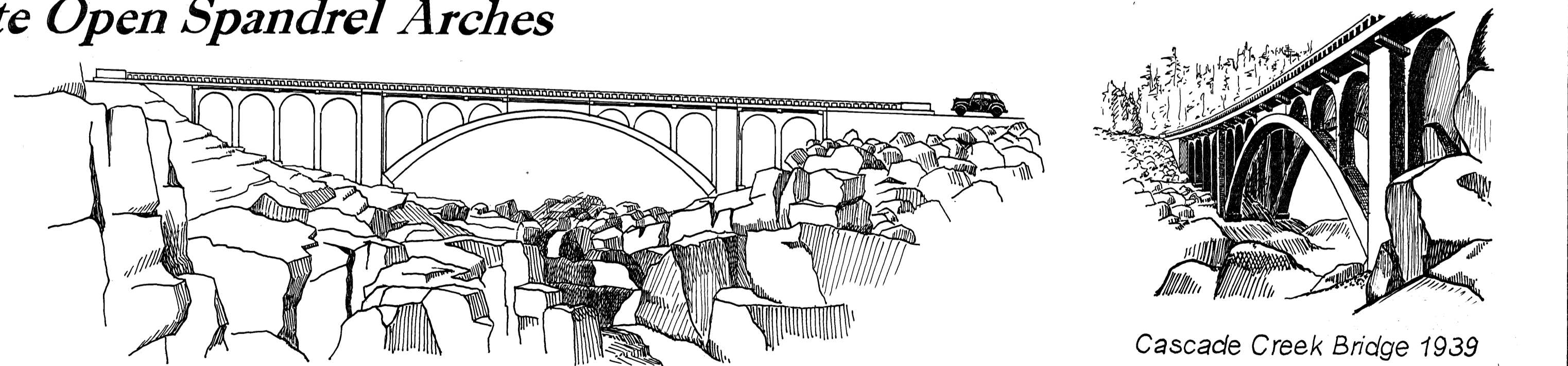
Less expensive than arched bridges, concrete girder spans still employed native stone for abutments. There are only two bridges of this style in Yosemite, and both are found on Tioga Pass Road: Tuolumne River Bridge, built in 1934, and South Fork Tuolumne River Bridge, erected in 1937.



South Fork Tuolumne River Bridge 1937

11 Reinforced-Concrete Open Spandrel Arches

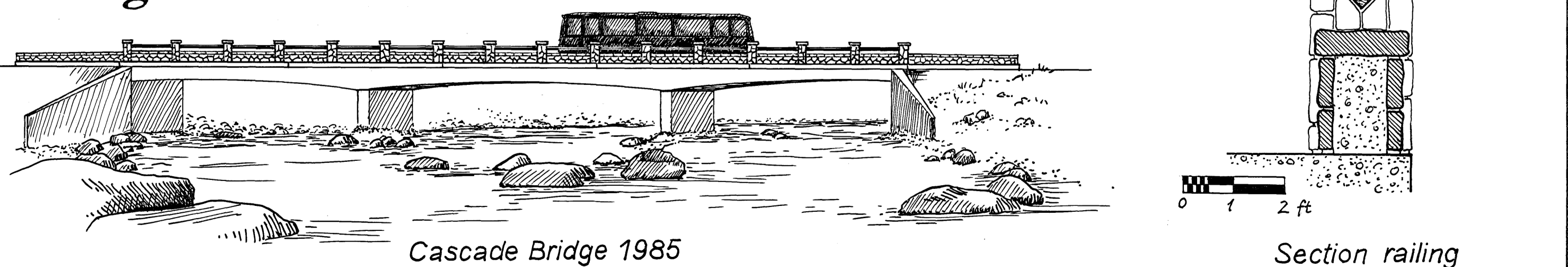
The three soaring open spandrel arch bridges on the Big Oak Flat Road reflect a streamlined modern style. They were built across Tamarack Creek, Wildcat Creek and Cascade Creek in 1939.



Cascade Creek Bridge 1939

12 Contemporary Rustic Bridges

Recent bridges in the park reflect a return to the rustic style in their use of native stone facing. The Cascade Bridge on El Portal Road was built in 1985. The section shows the interior concrete construction. Another example is the new Sentinel Bridge in Yosemite Valley, built in 1994.



Cascade Bridge 1985

Section railing

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