The same difficulties that confronted the Army Corps of Engineers faced the Bureau of Public Roads engineers -- weather, geologic and thermal features, a short construction season, and the transportation of heavy construction equipment. The Bureau initiated the Park survey in 1926 and construction began the following year.. The original layout of the Grand Loop and entrance roads proved to meet the needs of the public and it was preferable to reconstruct the existing roads than to pursue additional excavation. The Bureau collaborated with the National Park Service on the design and development of the multi-year project. The Park had a resident landscape architect who inspected road construction and supervised the development of landscape features.

By 1936, 200 miles of the park roads had been improved, 19 major bridges had been constructed, and Chittenden's Golden Gate Viaduct had been reconstructed. The previous Army road standard of an 18 foot width had been increased to 28 feet for the Grand Loop and 26 feet for the entrance roads.

Landscape architects worked hard to minimize impact to the environment. The standard procedure in the park of rounding the tops of cut slopes and flattening of cut and fill slopes became common practice by the highway departments in the surrounding states. If a road was abandoned, great care was taken to reverse the construction operation and reestablish the original contour of the land. Trees were planted, and slopes were covered with topsoil to encourage plant growth.

Road construction was interrupted by World War II, but after 1945, the pre-war plans were implemented. Yellowstone did not experience another major road project until the Mission 66 program, a ten year nationwide National Park Service plan for improvements to facilities to meet the needs of an expected 80 million visitors to all national parks. It was acknowledged in 1956 that Yellowstone's road system was sufficient for visitor usage, thus no new roads were developed. However, modernization included the construction of pullouts and parking strips, and relocation of some roads to minimize the intrusion on natural areas. In addition to road surfacing and some widening of the roads in the Madison, Norris, and Lake Yellowstone areas, bypasses were completed at Lake, West Thumb, and Old Faithful.

In 1988, the Federal Highways Administration began a 20 year reconstruction program in Yellowstone.

Cars entering the Northeast Entrance checking station, 1936.
Photograph taken by Danecki.

Chronology and Achievements

1872 - 1883

Congress creates Yellowstone National Park

Civilian superintendents administer the Park

Idea of Grand Loop System to enable people to visit the scientific and scenic wonders.

The Grand Loop -- 104 of the 140 mile system completed.

1883

U.S. Army Corps of Engineers

Assumes the role of road and bridge construction in Park.

1885

Dan Kingman -- Army Corps Engineer

Imparts philosophy that the improvements will leave the park "as the hand of nature left it."

1901 - 1904

Hiram Chittenden -- Army Corps Engineer

The route through Golden Gate Canyon, south of Mammoth Hot Springs.

East Entrance Road.

North Entrance Arch at Gardiner, Montana.

Original Chittenden Bridge view from upstream, 1956.
This bridge was replaced in 1962.
Photograph taken by Bob Beal.

Great care was given in the design of the bridge over the Yellowstone River as it was in "one of the grandest sections in the entire park." Chittenden chose the Melan arch type for its combined strength and artistic design. A few years earlier, he called for the replacement of all of the wooden bridges with steel bridges and concrete abutments.

Firehole River Bridge, (1911)
Fountain Freight Road

Obsidian Creek Bridge, (1910)
Indian Creek Campground Road

1918

National Park Service -- Dept. of the Interior

Assumes responsibility for bridges and road construction in Yellowstone. Interior Secretary Franklin Lane issues National Park Policy in which he addressed road construction specifically by calling for the harmonizing of roads, trails and bridges with the natural environment.

1926

Bureau of Public Roads

Assumes responsibility for survey, construction of park roads and bridges. Park Service landscape architects assist the Bureau of Public Roads in the architectural and landscape plans for the roads and bridges in the Park.

Cub Creek Bridge (1928)

1930s

Bureau of Public Roads -- National Park Service

Collaboration between the two agencies produced a number of bridges, pullouts, culverts, stone headwall, stone guardrails, and log guardrails which reflect the National Park Service philosophy of blending the man-made features with the natural environment.

1966

National Park Service -- Mission 66

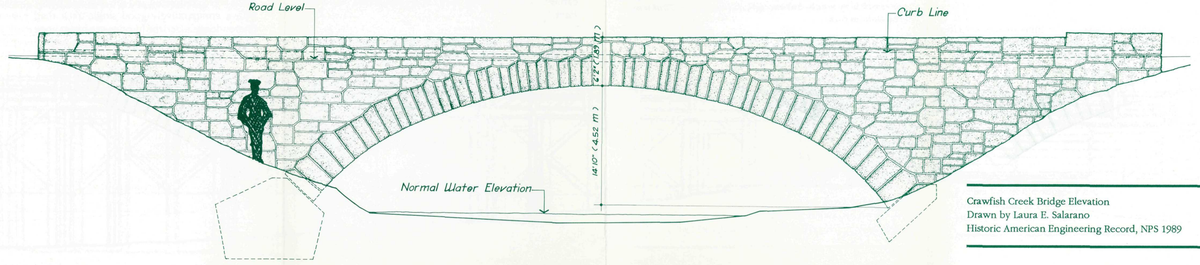
A long range National Park Service plan designed to upgrade the park programs and facilities to meet the requirements of an expected 80 million visitors system wide in 1966.

1983

Federal Highway Administration -- National Park Service

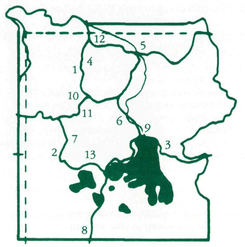
Cooperative agreement between the two agencies is formalized to undertake a program for completely rehabilitating the 50-year-old main park road system in Yellowstone.

Current 20 year program for the rehabilitation of the Yellowstone road system began in 1988.



Crawfish Creek Bridge Elevation
Drawn by Laura E. Salarano
Historic American Engineering Record, NPS 1989

1. Obsidian Creek Bridge (1910) Indian Creek Campground Road
2. Firehole River Bridge (1911) Fountain Freight Road Midway Geyser Basin
3. Cub Creek Bridge (1928) East Entrance Road
4. Seven Mile Bridge (1932) Mammoth Hot Springs to Norris Junction.
5.. Tower Creek Bridge (1933) near Tower Falls.
6. Otter Creek Bridge (1934) South of Canyon Junction.
7. Nez Perce Creek Bridge (1935) Old Faithful to Madison Junction.
8. Crawfish Creek Bridge (1936) South Entrance Road.
9. Fishing Bridge (1936) East Entrance Road.
10 & 11. 2 Gibbon River Bridges (1938) Madison Junction to Norris Junction.
12. Gardner River Bridge (1939) Mammoth Hot Springs to Tower Junction.
13. Isa Lake Bridge (designed in 1930s, built after 1943) Old Faithful to West Thumb.



This brochure was produced by the Historic American Engineering Record (HAER), a program of the National Park Service, U.S. Department of the Interior. The Yellowstone Roads and Bridges Recording Project, conducted during the summer of 1989, was cosponsored by Yellowstone National Park, Robert D. Barbee, Superintendent; the Rocky Mountain Region, Lorraine L. Mintzmyer, Regional Director, and Rodd L. Wheaton, Chief, Division of Cultural Resources; the NPS Parks Roads and Bridges Program, John Gingles, Manager, and the Historic American Buildings Survey/Historic American Engineering Record, Robert J. Kapsch, Chief.

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Yellowstone Roads and Bridges

A Glimpse of the Past

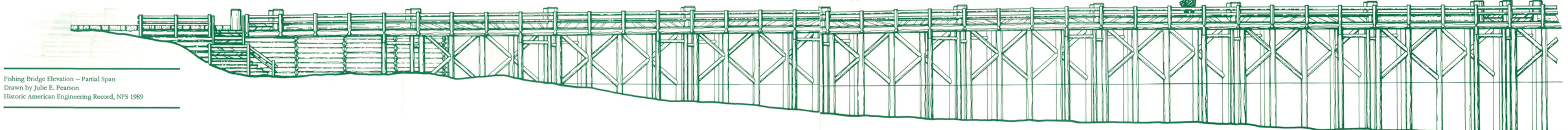
A buggy on the road from Norris to Madison Junction, 1912.
Photograph taken by the U.S. Army Corps of Engineers.

The First Baronett Bridge
Photograph taken by William H. Jackson. 1871

Prior to the creation of Yellowstone National Park, "Yellowstone Jack" Baronett built this log, toll bridge over the east fork of the Yellowstone River (Lamar River) near the Tower Junction.

As you drive through Yellowstone National Park visiting the Grand Canyon of the Yellowstone, Yellowstone Lake, the Upper, Lower, and Norris Geyser Basins, and the Mammoth Hot Springs terraces, you are following the approximate route conceived by the first superintendent, Nathanial P. Langford in 1872. The current roadwork you see on your journey through the park reflects the philosophy and consideration that was given to road construction one hundred years ago.

Superintendent Langford's idea for a circuit road approximately ninety miles long would enable visitors to reach significant scientific and scenic wonders, combined with his plans for good wagon approach roads. Today's road system is strongly reminiscent of his vision.



Fishing Bridge Elevation -- Partial Span
Drawn by Julie E. Pearson
Historic American Engineering Record, NPS 1989

By the end of 1882, 104 of the140 mile system had been completed. However, the general quality of roads was poor due to a lack of funds, as well as over ambitious planning. Carrie Strahorn described the conditions in 1880 in her book, *Fifteen Thousand Miles by Stage*, ". . . the public highway (that) was cut through the timber over rolling ground, with stumps left from 2 to 20 inches above the ground, and instead of grading a hill it went straight up on one side and straight down on the other."

In 1883 road construction entered a new era that would last for the next 34 years. The U.S. Army Corps of Engineers assumed responsibility for the road system. The first engineering officer, Lt. Dan Kingman, began by raising the quality of the existing roads. Perhaps a more significant contribution was his development of a landscape ethic, a philosophy which would be expanded upon many years later by the landscape architects of the National Park Service

The plan for improvement (of the road system) which I have submitted upon the supposition, and in the earnest hope that it will be preserved as nearly as may be as the hand of nature left it--a source of pleasure to all who visit it, and a source of wealth to no one.

--Lt. Dan Kingman
U.S. Army Corps of Engineers, 1885

In 1885, Lt. Kingman completed the construction of a 228 foot wooden trestle which carried the roadway through Golden Gate Canyon.

Golden Gate Viaduct, late 1880s.
Photograph taken by Frank J. Haynes.

. . . we heard the roar of the river, and the road went round a corner. On one side piled rock and shale. . . on the other a sheer drop, and a fool of a noisy river below. . . Then my stomach departed from me, as it does when you swing, for we left the dirt, which was at least some guarantee of safety, and sailed out round the curve, and up a steep incline, on a plank-road built out from the cliff. The planks were nailed at the outer edge, and did not shift or creak very much--but enough, quite enough. That was the Golden Gate.

--Rudyard Kipling
***From Sea to Sea**, 1889*

Another Army engineer, Lt. Hiram Chittenden, played a significant role in Yellowstone National Park. Besides numerous engineering feats, he published one of the earliest histories of the Park, *The Yellowstone National Park.*

In 1894 Chittenden expressed the difficulty of constructing roads and bridges in Yellowstone National Park.

The first difficulty arises from the wretched nature of the material through which the roads pass. Unquestionably there is no other spot of equal area on the face of the earth where there is such a remarkable variety of substances, and such curious combinations, in the composition of the soil. . . He may expect to encounter in any single mile of road construction all the varities of work which he would find in building a turnpike from Portland in Maine to Portland in Oregon.

--Lt. Hiram Chittenden,
U.S. Army Corps of Engineers, 1894

At the turn of the century visitors traveling in the Park were conveyed by either horses, wagons, bicycles or stage coaches. Their common complaint about the roads was dust.

. . . These passing wagons fill the air with dense clouds of dust which envelop us so that we are scarcely able to distinguish each other. One of the necessities of the tourist in this region is a good linen duster, buttoning well up at the neck, and reaching to the knees--also a pair of dark goggles to protect the eyes from the dust and the reflections from the white limestone, which are positively injurious, as well as unpleasant.

--Charles M. Taylor, Jr.
***Touring Alaska and the Yellowstone**, 1901*

By the time Chittenden left the Park in 1906, the proposed roads were completed and the Park had been " provided with a comparatively good single-track road system.." Chittenden realized the importance of entrance roads and the necessity for side roads enabling tourists to visit interesting points off the main route of travel.

Visitors fishing off the old fishing bridge, 1928.
Photograph taken by Sam Woodring.

. . . Before long the rain began to fall, and as the roads were soft clay they soon became very slippery and we had to put on our chains to avoid a serious accident. Even then it was difficult driving on those steep, narrow, winding roads, and we made very poor time, the car just crawling along on low or second gear for hours at a stretch. In places we had to stop and wait for a passing car or truck to extricate itself from the mud, and considered ourselves fortunate that we were not ditched ourselves.

--Mary Crehore Bedell
***Modern Gypsies**, 1924*

On August 1, 1915, automobiles were officially permitted to enter the Park. The admission of automobiles prompted the issuance of new road regulations, primarily that all traffic was one way. Scheduling of travel on the routes was also necessary. The transition from horse-drawn vehicles to the automobile did produce some positive effects on the Park environment. As the roads were paved, the many unsightly water storage tanks for reducing dust on the roads were removed, the vegetation was no longer coated with dust, and it was not necessary to provide feed and board for over 1,300 horses.

Implementation and maintenance of roads in Yellowstone was transferred to the newly-formed National Park Service in 1918. Almost immediately, the Secretary of the Interior, Franklin Lane, reaffirmed the Army Corps of Engineers' philosphy toward road construction in the Park. In his Statement of National Park Policy, he addressed road construction specifically by calling for the harmonizing of roads, trails, buildings and other improvements with the landscape, and the employment of "trained engineers who either possess the knowledge of landscape architecture or have a proper appreciation of the aesthetic value of park lands."

In 1926, the National Park Service and the Bureau of Public Roads reached an agreement that the Bureau would survey, construct, and improve the road system in the Park. At that time most of the park roads were considered unimproved and some of the roads were so narrow that they were restricted to one-way traffic. Because many of the State-Federal highway routes were now of such a high standard, the public appreciated the comfort of traveling on good roads. The park visitor was quick to complain after paying an entrance fee and then having to experience the narrow and dusty roads.

A car stuck in the rutted Cooke City road. 1922
Photograph taken by Linckey.

We started out from the park this morning. I never seen such grades in all my life. Steep as a barn roof. Burned out my foot-brake right off and then, by gosh, we wore out the emergency brake, too. Had to pull over to the roadside and put in new brake shoes. We was lucky to have 'em along, else we'd be stranded up there yet.

-- Refers to Sylvan Pass in 1926.
Frederic F. Van de Water
***The Family Flivver to Frisco**, 1927*