

U.S. DEPARTMENT OF INTERIOR
NATIONAL PARK SERVICE
GLACIER NATIONAL PARK

THE GOING-TO-THE-SUN HIGHWAY

in

GLACIER NATIONAL PARK

History and Progress

Glacier National Park was established May 11, 1910 and before the next year was four months old, development of the park road system was started. The initial undertaking, the road from Belton to Apgar, was at first only a means of connection for the transportation of park visitors from Belton entrance to the foot of Lake McDonald from which point they could make the trip to the Lewis (McDonald) hotel by boat, but probably few realized at the time that this two and a half miles of roadway would still be in use more than twenty years later as a part of the most scenic route in North America and probably in all of the world.

By April 28, 1911, W.R. Logan, the first superintendent of Glacier National Park, had secured the last of the deeds covering the right-of-way between Belton and Apgar but it was not until May of 1912 that this strip of road was completed.

The first annual report of the Director of the National Park Service in 1917 stressed the importance of having a highway over the Continental Divide between the two sides of the park. The report also mentioned the especial desirability of having a road built to the Lewis (McDonald) hotel near the head of Lake McDonald.

First work on this section of the road was done under the direction of J.E. Lewis, owner of the Lewis hotel, who by April 1919 had spent \$3,200 in cutting three and one-half miles of right-of-way and grading two miles of the road. He also built three bridges. Mr. Lewis believed the construction of a road to the hotel would greatly accelerate his business as the only way of approach to the hotel was by boat from the foot of the lake.

Stephen T. Mather, Director of the National Park Service, included in his 1919 report the fact that "The survey for a transmountain road, undertaken last year, resulted in finding a perfectly practicable route through Logan Pass. The line as located provides for a road a little less than 50 miles in length, starting at the foot of Lake McDonald. The route is along the east side to the head of the lake, then up the beautiful McDonald Creek valley to Trapper creek, along Trapper creek where it flanks the sides of magnificent Mt. Cannon, thence over Logan pass through the Hanging Gardens, down Reynolds creek, skirting the upper St. Mary lake to Going-to-the-Sun chalets, thence along the north shore and foot of St. Mary lake to a junction with the Blackfoot highway at St. Mary chalets. It is doubtful if any other road in America can in the same distance unfold to the traveler such a grand array of beautiful forests, dashing mountain torrents, wonderful gorges and valleys, towering cirques, a hundred waterfalls,

glaciers, and a vista of bold needle-peaked mountains and serrated escarpments which are found only in our most northern Rocky Mountains, as will this road." (Later surveys and plans changed this route in some instances as it now follows McDonald creek instead of Trapper creek and switches back to Logan pass, from there going around the flanks of Pollock, Piegan and Going-to-the-Sun mountains to the upper end of St. Mary lake).

About this time comment arose about the desirability of building a road over Logan pass when it would be possible to build one over the lower Marias pass just outside of the park boundary at less cost. Park Service officials stated that these critics did not understand the value of the Logan Pass road from the scenic standpoint, nor could they appreciate the great benefits which a tourist road such as this would bring to the State of Montana. The advantages of a scenic road over Logan pass would be much greater than a commercial road built over Marias pass, especially when railroad service could take care of all travel over this latter route. However, the Park Service did not oppose the construction of the road over Marias pass but it advocated the Logan pass road as being of primary importance. In 1930 Roosevelt highway was completed around the southern boundary of the park so that upon completion of the Going-to-the-Sun highway, as the transmountain road over Logan Pass is called officially, automobiles will be able to take either route between the two sides of the park.

Surveys were conducted by the National Park Service around both sides of Lake McDonald and it was decided that the east side route--the one formerly laid out by Mr. Lewis--was better suited for the needs as it would be shorter, cheaper and require the removal of less rock than the west side route. Consequently the first set of bids were opened September 12, 1921 and the contract for the grading of the road to the Lewis hotel was awarded to the Carlson-Norman Company of Spokane, Washington. The amount of the contract was \$42,375.00. The road was cleared to the hotel, a distance of nine miles, by force account work of the National Park Service which was completed August 31, 1921 at a cost of \$28,018.88. The road was also cleared two miles farther on to the McDonald Creek bridge at a cost of \$5,645.73.

On July 23, 1922 bids were opened for the construction of about seven miles of road from the McDonald Creek bridge up the McDonald Creek valley. Laux and Gardner of Kalispell, Montana were the successful bidders and the contract was signed July 31, 1922, the amount being \$55,118.00.

Stevens Brothers of St. Paul, Minnesota, were the successful bidders for work on the next section of the highway, a piece of road about five and one-half miles in length. Their contract for \$54,854.00 was dated August 13, 1924. The time limit set for their work was extended from July 31 to October 10, 1925, but the contract was not finished until the work was done by force account by the National Park Service. Stevens Brothers received a portion of the contract amount and the rest was used for the force account work.

During the winter of 1924-25 an agreement was reached between the National Park Service and the Bureau of Public Roads whereby the Bureau was to take over the engineering supervision for the completion of the Going-to-the-Sun highway. A conference was held in Spokane, Washington in April

between Charles J. Kraebel, superintendent of Glacier National Park, the district engineers of the Bureau and Assistant Landscape Engineer Thomas C. Vint of the National Park Service. The results of this conference were the codifying of an outline of procedure between the Bureau and the National Park Service in major road location and construction within the park, the decision to concentrate all available road funds for the park on the west side to complete the road to the summit of Logan Pass, and the giving of careful consideration to fundamental principles of landscape preservation in drawing up the specifications for the Going-to-the-Sun highway.

On September 11, 1924 Frank A. Kittredge, United States highway engineer and now chief engineer of the National Park Service, arrived in Glacier National Park to supervise a location survey of the uncompleted portions of the highway. Two survey parties were put to work, one from Logan Pass to Going-to-the-Sun chalets and the other from the pass to a point near Trapper creek where the road was to connect with the Mt. Cannon section. The surveys began September 15 and ended November 10, 1924.

Bids for the construction of the west side project--the Garden Wall section of the highway--of twelve and four-tenths miles were opened June 10, 1925 with Williams and Douglas of Tacoma, Washington submitting the lowest bid. The amount was \$869,145.00. On June 22 the contractor's forces arrived in Belton and began the preliminary work of establishing camps and starting the construction. Materials could be hauled by truck from Belton to Avalanche creek, a distance of about eighteen miles, but from there to the beginning of the project it was necessary to use pack horses, a distance of about three and one-half miles. Later the Mt. Cannon section was finished giving the contractors a chance to truck their materials and supplies directly to the beginning of their project.

Williams and Douglas closed activities for the year on October 31, 1925 and the preliminary operations of opening up the camps were begun April 1, 1926 for the next season's work. Construction work for the season of 1926 ceased at the end of October. However, the tunnel crew continued to work until December 15, 1926 when extremely cold weather forced a shut-down. Activities were again resumed April 1, 1927 and work for the season was concluded November 8 of that year. Work again was started May 28, 1928 and the construction was completed to the summit of the Continental Divide at Logan Pass on October 20, 1928, thus giving Glacier Park more than half of its west-to-east highway at that date.

October 1, 1927 was the date originally specified for completion of the Williams and Douglas contract but due to an extension to include finishing and surfacing of the Mt. Cannon section, three and two-tenths miles in length, the completion could not be accomplished by the scheduled date. This portion of the Mt. Cannon section was gravelled and finished from savings realized by the National Park Service from the sale of explosives to the contractors.

In the Williams and Douglas construction, five camps were maintained with an average total of 225 men. At the peak of the work about 300 men were employed and six camps were maintained. The excavation of the Garden Wall section required approximately one pound of explosive per cubic yard of material removed, because of the large amount of rock encountered.

In one place--below the switchback--it was necessary to bore a tunnel through a rock cliff for continuation of the highway. This tunnel work was sublet to H.W. Bennett and Phil Segolia who kept a small crew at work on it until extremely cold weather forced a shut-down.

Between Logan Pass and Going-to-the-Sun clearing of the right-of-way for the highway was completed during the spring of 1931 and in May and June of that year contracts were let by the Bureau of Public Roads for the grading of this last link of the highway. Successful bidders for this work were the Colonial Building Company of Spokane, Washington and A. Guthrie and Company of Portland, Oregon. The Colonial company sublet a portion of its contract to A.R. Douglas, who found that, because he had no road connection with his base of supplies as he was working on the middle portion of the road, it was necessary to transport his equipment and materials to the head of St. Mary lake on a small scow and then haul it to the scene of activities on a "sled" pulled by a caterpillar.

The Colonial contract allowed 300 days for the completion of the work with the contract time starting June 27, 1931. Suspension was ordered October 24, 1931 and work was resumed June 3, 1932. The contract was for the amount of \$395,365.50 and the distance was 4.7 miles.

The contract of A. Guthrie and Company was for \$200,178.70 with a calendar allowance of 300 days starting June 9, 1931. Suspension was ordered November 10, 1931 with work being resumed June 3, 1932. A four-day extension was granted so that the time expired October 29, 1932. The Guthrie contract was for 4.5 miles.

The Douglas subcontract was the first completed and the Douglas crews moved out during the latter part of August, 1932. The last portion of the road to be broken through was on the lower end of the Colonial contract. This was done early in September.

A little more than a mile from Logan Pass the Colonial company found it necessary to bore a second tunnel on the highway, this one being approximately 408 feet in length and of difficult construction due to its inaccessibility.

On September 3, 1932 Horace M. Albright, Director of the National Park Service, headed a party on an inspection tour of the entire Going-to-the-Sun highway starting from Lake McDonald hotel and driving to Logan Pass where the first stop was made. The party then proceeded to the tunnel on the east side and, leaving the bus walked a short distance to the upper end of the Douglas subcontract where another bus picked up the group and took it to Glacier Park Hotel, stopping at Going-to-the-Sun chalets for lunch.

In August, 1932 word was received at park headquarters that the National Park Service had authorized the Bureau of Public Roads to spend \$70,000 for work on the only portion of the highway not completed or under contract at the time. This amount brought the total for the St. Mary-Sun Camp section of the road to approximately \$200,000 yet to be spent there, exclusive of surfacing.

A road was built over the route from St. Mary almost to Going-to-the-Sun on two previous contracts. Thomas McGovern of Browning, Montana was awarded a contract for about eight miles of road when bids were opened September 30, 1924. His bid was \$44,500.00 and his time expired September 1, 1925. Previously, when bids were opened June 28, 1923 Stevens Brothers of St. Paul, Minnesota were awarded a contract for road work over a part of the same route. Their bid was approximately \$79,000.00 and the time expired September 30, 1924. The road to be built from St. Mary to Going-to-the-Sun in the near future will replace this road worked on by McGovern and Stevens Brothers. It will be the last section of the Going-to-the-Sun highway and will include the construction of a new wye at St. Mary junction.

CONSTRUCTION FEATURES

One of the most scenic features of the Going-to-the-Sun highway is the construction of two tunnels through overhanging rock cliffs on the main route of the highway. One tunnel is on each side of the Continental Divide.

The tunnel on the west side project is a short distance below the switchback and is 192 feet in length. It has a width of 20 feet, a height of 18 feet, the top portion being a half circle of 10 feet radius. Two windows were cut in the tunnel for scenic effect and for light and ventilation. Rock guard rails have been built around the edges of the window floors and through the openings a magnificent view may be obtained. The tunnel contract was sublet to H.W. Bennett and Phil Segolia by Williams and Douglas. A crew of about 25 men was at work in double or triple shifts, from October 18, 1926 until early in the season of 1927 when the west portal was broken through. Timber bracings were removed late in the season of 1928 when the west end and portal were completed.

The other tunnel was built one mile east of Logan Pass and is 216 feet longer than the first. Ed Holm and Company of Spokane, sub-contractor began preparations for work on this project July 20, 1931. By August 2nd the path and ladders were completed to the bench cut at the east portal. To open the east portal sufficiently to commence tunnel work necessitated the excavation of 6,252 cubic yards of rock. On August 14th the first drill was started in the heading proper. By August 31st after the most dangerous drilling was completed, three shifts of men were put to work and the tunnel was holed through by October 19th. The tunnel site was only accessible by a horse trail from Logan Pass. This trail lay in the valley nearly 1/4 mile below the tunnel site, making such means of ingress and egress useless for hauling in tunnel equipment. A new trail had to be hewn and benched along the rock cliffs for one mile from the summit of the Pass to a point above the tunnel site. From here material, equipment and supplies were packed by man power down the foot path to the 100 foot ladder which dangled perpendicularly against a perpendicular cliff, then down another ladder to the tunnel at an average rate of one round trip per half hour per man. The approximate distance from about the center of the ladders to the bottom of the cliff was 1200 feet. It was necessary to start the tunnel from the lower or easterly end, which eliminated all chance of using bulky or heavy equipment, thus making it impracticable to use mucking machinery and

left the contractor the only choice of equipment in the old so-called " Swedish Chariot" pushed by hand power and loaded by hand mucking. The finished tunnel is 408 feet long, 19.9 feet high in the center of the arch and the width of the travel way is 32 feet.

Due to the fact that all final construction reports concerning the work done on this road have not been made up, a conservative estimate of the work is as follows:

Probably more than 60 per cent of the excavation for this highway was through solid rock and 1,919,689* cubic yards of material had to be moved, making tunnels, grading, filling, etc. Twenty two thousand three hundred sixty lineal feet of 15", 18", 24", 30" and 36" culvert pipe were laid in many different places along the road for proper drainage. Masonry work including some concrete, some dry rock walls, and some wet masonry rock walls, box culverts, bridges etc. amounted to more than 22,529 cubic yards. The tunnel on the west side of the park contained 3,729 cubic yards of solid rock alone and the one on the east side of Logan Pass contained 6,778 cubic yards. This material was what had to be removed from the inside of the passages.

COST OF THE ROAD

In figuring the cost of the Going-to-the-Sun highway several important factors involved make it necessary that the total arrived at is only approximate. In building the road from Belton to Going-to-the-Sun, the total spent by September 15, 1932 was \$1,688,211.09.

The following is a tabulation of the approximate cost spent to the above mentioned date on the road between Belton and Going-to-the-Sun exclusive of any oiling done on the road bed:

1911 Belton to Apgar	\$21,310.78
1919 Apgar to Lewis Hotel by J.E. Lewis for 3 1/2 miles	3,200.00
1921 Carlson-Norman Company, Apgar to Lewis Hotel	42,375.00
1921 Force account work to Lewis Hotel	28,018.88
1921 Clearing to McDonald Creek Bridge	5,645.73
1922 Laux & Gardner, 6 to 8 miles from McDonald Creek bridge	58,118.00
1924 Stevens Brothers and force account	54,854.00
1925 Williams and Douglas, Garden Wall	869,145.00
1924 Survey on both sides of Logan Pass	20,000.00
1931 Colonial Construction Company, east of Logan Pass	385,365.00
1931 A. G. thrie & Co., from end of Colonial construction	200,178.70

Grand total from Belton to Going-to-the-Sun 1,688,211.09

For a grand total from Belton to St. Mary, including estimates of work yet to be done and the contracts of Thomas McGovern and Stevens Brothers, the following would be approximate:

Belton to Avalanche	33,405.86
Post Const. on East Side of Logan Pass	2,000.00
Belton to Going-to-the-Sun	1,688,211.00
Estimates of work yet to be done	425,863.80
Thomas McGovern Contract	44,500.00
Stevens Brothers contract (approximate)	79,000.00
Douglas Contract - 1932-33	80,468.86

Total Cost Belton to St Mary - 1934 - Construction without maintenance \$2,353,549.61

Thus it may be safely said from the above figures that by the time the Going-to-the-Sun Highway is completed from Belton to St. Mary junction and oiled over the entire route, the total cost will be in excess of two and a quarter million dollars. Cost of upkeep, of course, will swell this amount.

On October 13, 1932, a contract was awarded to A.R. Douglas covering Project E-1-E2 for grading 7.865 miles of the road from the end of the Guthrie contract which completed a 4.4 mile strip east of Sun Camp. The grading of the whole strip of highway from Belton to St. Marys is now either completed or under contract and the Bureau of Public Roads officials together with the Park Service officials are doing everything in their power toward making it possible to open this road for public travel by July 15, 1933, although construction, including surfacing operations, will, no doubt, be carried on during the entire 1933 season and probably 1934. *Contract for \$80,468.*

Since 1925 the engineering supervision of this highway, in common with other major road projects in the national parks, has been handled by the United States Bureau of Public Roads for the National Park Service; and when the road across Logan Pass is finally completed, it will be a monument to their engineering skill and efficiency.

*Figure only approximate.