

NATIONAL HISTORIC LANDMARK NOMINATION

NPS Form 10-900

USDI/NPS NRHP Registration Form (Rev. 8-86)

OMB No. 1024-0018

GOING-TO-THE-SUN ROAD, GLACIER NATIONAL PARK

United States Department of the Interior, National Park Service

National Register of Historic Places Registration Form

1. NAME OF PROPERTY

Historic Name: GOING-TO-THE-SUN ROAD

Other Name/Site Number: Transmountain Highway, Going-to-the-Sun Highway

2. LOCATION

Street & Number: Glacier National Park

Not for publication: \_\_\_

City/Town: West Glacier

Vicinity: X

State: Montana

County: Flathead/Glacier

Code:029/035

Zip:59936-0128

3. CLASSIFICATION

Ownership of Property

Private: \_\_\_
Public-Local: \_\_\_
Public-State: \_\_\_
Public-Federal: X

Category of Property

Building(s): \_\_\_
District: X
Site: \_\_\_
Structure: \_\_\_
Object: \_\_\_

Number of Resources within Property

Contributing

\_\_\_
\_\_\_
15
\_\_\_
15

Non-contributing

\_\_\_ buildings
\_\_\_ sites
\_\_\_ structures
\_\_\_ objects
\_\_\_ Total

Number of Contributing Resources Previously Listed in the National Register: 11

Name of Related Multiple Property Listing: Glacier National Park MRA and Historic Park Landscapes in National and State Parks, 1995.

Date: FEB 18 1997

FEB 18 1997

by the Secretary of the Interior

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**4. STATE/FEDERAL AGENCY CERTIFICATION**

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this X nomination \_\_\_ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property \_\_\_ meets \_\_\_ does not meet the National Register Criteria.

\_\_\_\_\_  
Signature of Certifying Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal Agency and Bureau

In my opinion, the property \_\_\_ meets \_\_\_ does not meet the National Register criteria.

\_\_\_\_\_  
Signature of Commenting or Other Official

\_\_\_\_\_  
Date

\_\_\_\_\_  
State or Federal Agency and Bureau

**5. NATIONAL PARK SERVICE CERTIFICATION**

I hereby certify that this property is:

- Entered in the National Register
- Determined eligible for the National Register
- Determined not eligible for the National Register
- Removed from the National Register
- Other (explain): \_\_\_\_\_

\_\_\_\_\_  
Signature of Keeper

\_\_\_\_\_  
Date of Action

Designated a  
NATIONAL HISTORIC LANDMARK on

FEB 18 1997

by the Secretary of the Interior

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**6. FUNCTION OR USE**

Historic:	Landscape	Sub:	Park
	Transportation	Sub:	Road-related
	Recreation and Culture	Sub:	Outdoor Recreation
Current:	Landscape	Sub:	Park
	Transportation	Sub:	Road-related
	Recreation and Culture	Sub:	Outdoor Recreation

**7. DESCRIPTION**

ARCHITECTURAL CLASSIFICATION: Other: NPS Rustic

## MATERIALS:

Foundation:

Walls:

Roof:

Other: Pavements and Curbs: Packed Earth, Gravel, Asphalt, Stone, Concrete

Guardwalls and Other Landscape Structures: Concrete, Sandstone, Argillite

## **Describe Present and Historic Physical Appearance.**

### Summary

The Going-to-the-Sun Road Historic District is located in the middle of Glacier National Park, stretching from the park's west, or West Glacier entrance, across the continental divide, to the park's east, or St. Mary's entrance. The district encompasses 48.7 miles of the road, from the foot of Lake McDonald to the Divide Creek on the eastern park boundary. The two-mile portion of the road at its west end, from West Glacier to Apgar, has been altered and is not included in the district. The historic district contains the original road, bridges, tunnels, culverts, retaining walls, and almost 40,000 feet of guardwalls, all built between 1922 and 1937.

The setting of the district is one of the most spectacular scenic regions of the Northern Rockies. At lower elevations, thick forests of larch, spruce, fir and lodgepole pine are broken up by deep, narrow lakes, some of which are 20 miles long. At higher elevations, jagged peaks in the 8,000 to 10,000-foot range are interspersed with numerous glaciers.

The entrance of the park is off U.S. Highway 2 at a bridge over the Middle Fork of Flathead River. The NHL district begins two miles inside the park at Apgar. The first 10 miles of the district follow the eastern shore of Lake McDonald, and are characterized by gentle curves and level grades. At the northern shore of the lake the road starts to follow McDonald Creek and begins to include numerous turnouts to provide scenic views of the creek and its waterfalls. Crossing numerous other creeks, such as Sprague, Snyder, Avalanche and Logan, the road includes many masonry-faced concrete bridges and culverts.

After passing Logan Creek, the road begins to climb at a six percent gradient. The road continues to climb along the side of Haystack Butte, through the West Side Tunnel, and then bends around the Loop--a sharp switchback that sends the road back, across the face of Haystack Butte and up towards the Continental Divide. As it approaches Logan Pass, the road is benched into the sedimentary rock of the Garden Wall, a nearly vertical cliff. Once across the divide, the road begins to descend at a gentler gradient to the northern shore of St. Mary Lake.

All the associated culverts, retaining walls, and guard walls of the road are included in the NHL district and are of "NPS Rustic" construction. Horizontal coursing is avoided, and masonry joints are irregular. Native stone (mostly buff limestone, red argillite and green argillite) is roughly finished, and the tops of the guard walls are crenelated. Concrete culvert headwalls and concrete bridges are veneered in stone, and the irregular joints and rough finishes of the veneer complement the work of the guardwalls and retaining walls. Concrete culverts often feature masonry arched facades.

The Going-to-the-Sun Road possesses extraordinary integrity to the period of its construction. Other than the first two miles of the road (which have had various alignments during the park's history and are not included in the NHL district) Going-to-the-Sun Road provides nearly the same experience for visitors that it did during the historic period. The original alignment of the road remains true to the locations that Thomas Vint suggested and which

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Frank Kittredge, W.G. Peters, and A.V. Emery finalized. The original 22-foot width of the roadway has been maintained, except on the 10-mile traverse of the Garden Wall, which in places has always been narrower. Although the road was not completely paved in asphalt until 1952, it first opened in 1933, and all the major structures were completed by 1937. Postwar construction has had almost no impact on the integrity of the road or its principal structures.

In 1983 the Going-to-the-Sun Road historic district, which originally extended 15 feet in either direction from the centerline of the road, was placed on the National Register of Historic Places. In 1985, it was made a National Historic Civil Engineering Landmark, a designation determined by the American Society of Civil Engineers. The current National Historic Landmark nomination describes a district measured 30 feet from the centerline of the road in either direction, in order to include all of the retaining walls, culverts, swales, and other structures associated with the road. In addition, the district widens to include all historic pull outs and parking areas along the road.

The original National Register district listed 10 principal structures, mainly the bridges and tunnels. This National Historic Landmark nomination lists 14 principal structures in addition to the road itself, which is counted as a structure. The four additional structures have been added as a result of research and documentation done since the original National Register listing.

### Description of Contributing Resources in District

The following description of contributing resources is divided into five categories:

- Spatial Organization
- Circulation
- Topography
- Vegetation
- Structures

Spatial organization refers to the composition and sequence of outdoor spaces within the district. Circulation refers to the means and patterns of movement through the district. Topography refers to the ways in which the landscape planning responds to the topographic features of the site, and also to modifications of that topography. Vegetation also refers both to the response to existing vegetation, and to the management of vegetation through pruning, removal, or addition of trees and shrubs. Structures include all the contributing structures in the district, including roads, trails, retaining walls, etc. No archeological resources have been considered in this survey.

### Spatial Organization

The spatial organization of the road was largely determined by the final decisions regarding the road's location. The shores of Lake McDonald (on the west side) and St. Mary Lake (on the east side) offered relatively level routes leading into the park, heading toward the continental divide from either side. The lakeshore portions of the road are relatively flat, straight, and at lower elevations (3,000-4,500 feet) than other parts of Going-to-the-Sun Road. These sections are characterized by broad vistas, often with the lakes in the foreground.

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On the ascent to and descent from the continental divide at Logan Pass, the spatial character of the road changes greatly. The higher elevations result in the remarkable panoramas of the glacial high country that make the road famous. Although hairpin and other tight turns were mostly avoided, benching of the road into solid rock resulted in slight narrowing of the roadway in places--and certainly an awareness of the steep drops just over the guardwalls. The narrowness of the roadway and height of the guardwalls combine to create a characteristic and unique impression.

### Circulation

Going-to-the-Sun Road provides the only automotive link between the east and west sides of the park. Long considered a vital missing link in Stephen Mather's "Park-to-Park Highway" system, Going-to-the-Sun Road provided a scenic route that allowed interpark traffic to proceed between Yellowstone and the Pacific Northwest via Glacier National Park. The location over Logan Pass (6,646 feet), and the setting of the road in a national park, have always precluded significant commercial use of the road, which remains closed many months of the year and could never be negotiated by modern trucks in any case. But despite its non-commercial nature, the road's value to local economies is huge, since hundreds of thousands of tourists are drawn to the area to drive the scenic route.

Because the road is the only extensive automotive route in the park, it defines the park's basic circulation pattern. The road accesses many of the principal points of interests, and many of the most stunning views in the park. The Lake McDonald Lodge (1914) as well as the Loop, Logan Pass, and Going-to-the-Sun Point (all points along the road) are among the most popular destinations in the park. Many trailheads are located at parking areas along the road, including the Sprague Creek Trail and the Highline Trail.

The importance of the road as the principal circulation system in the park has increased as use of trails by parties on horseback has declined significantly and arrival by railroad has ended altogether. This circulation pattern has preserved the vast majority of the park from access by automobile; but the road also assured that automotive tourists would have access to some of the most impressive scenery in the park. This policy of limiting the amount of road built in a park--but assuring that what was built would provide an unsurpassed experience--made Going-to-the-Sun Road a successful prototype for national park road development.

There are no major intersections within the historic district. Just outside the district, the road connects to Route 2 (the Marias Pass road) to the west, and Route 89 (the old Blackfoot Highway) to the east.

### Topography

The park's topography was the single greatest factor in determining the location and character of Going-to-the-Sun Road. The lakeshores of Lake McDonald and St. Mary Lake offered relatively level "water grade" access to the interior of the park, near its center, along a roughly east-west line. These convenient approaches to the Continental Divide from either

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side of the park helped determine the location of these principal park entrances. The passes through the mountains and over the divide each offered their own benefits and drawbacks. Every aspect of the road's location was predicated on a response to the site's extraordinary topography.

The decision to follow McDonald Creek (north of Lake McDonald) also took advantage of the easiest route toward the divide. Continuing to follow the creek valley as it turned away (to the northwest) from the mountain passes was part of the decision to approach Logan Pass along the route suggested by Vint and surveyed by Kittredge. By continuing to follow the creek, grades remained relatively gentle. The one great switchback, called the Loop, then allowed the alignment to begin traversing the sheer sides of Haystack Butte and the Garden Wall in a relatively straight shot for about 10 miles, at an average grade of six percent, to Logan Pass (6,646 feet). Along the way, the cliffside alignment offered spectacular views back to the south and west.

The most significant response to topography involved the decision to bench the road into the Garden Wall formation, rather than to build a series of switchbacks directly up the Logan Creek Valley (approaching Logan Pass from the west). This allowed the valley to remain untouched below, where it continued to serve as a verdant foreground for the spectacular views from Logan Pass.

The gentler grades on the other side of Logan Pass allowed for a descent with one, much shorter switchback. As the road approached St. Mary Lake, Thomas Vint requested that Frank Kittredge's original alignment be adjusted to keep the road higher, and away from the lakeshore at first. This adjustment, which Kittredge agreed to, protected more of the shore, and provided the dramatic views of the lake from above that now characterize this portion of the road. The road exits the park, again on easy grades, following the northern shoreline of St. Mary Lake.

### Vegetation

During the construction of Going-to-the-Sun Road the preservation of vegetation was a significant concern. Special blasting techniques (using smaller charges) were written into construction contracts to avoid scarring and destroying trees (and other features) over a wide area.

Nevertheless, construction inevitably cleared "brush" and trees through in a corridor along the road. This clearing of a corridor from 30 to 60 feet wide or more (depending on conditions) opened up views in many areas that would not have been available otherwise. In some cases, such as pull outs and other identified scenic views, subsequent management of vegetation kept certain vistas open. In other cases, the desire to minimize the management of vegetation has led to views being closed off over a period of years. If at higher elevations vegetation rarely becomes a factor (portions of the road around Logan Pass are above the treeline), at lower elevations along the lakeshores various species of trees (alders, for example) and shrubs can grow into a thick visual barrier.

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Allowing dramatic views from the road to be significantly impaired--especially at overlooks--could profoundly alter the experience of park scenery for many visitors; on the other hand, the preservation of roadside vegetation has always been an important consideration in engineering park roads and in park management generally. Lakeshore vegetation also often provides important wildlife habitat. The management of vegetation presents difficult choices for park managers.

The historic condition of the roadside, because of construction activity, in general was less vegetated. And there can be no question of the importance of scenic views in the planning, design, and original conception of the road. Roadside pull outs, in particular, obviously were planned to exploit certain views. Beyond these general points, however, historical documentation rarely offers specific guidance for the management of vegetation on roadsides. As vegetation has reestablished along roadsides, park managers have had to develop their policies in this regard. On certain lakeside portions of Going-to-the-Sun Road, for example, certain trees (cedars, most successfully) have been limbed up, allowing trunks to frame views creating a striking effect which may date to the historic period in places, but in any case is a successful solution that retains the older trees and reestablishes the views.

Overall, in part because of the actions of park managers, the impact of increased vegetation on the scenic integrity of the road has been limited to certain areas, and should not be considered an overly significant impact on the road's historic integrity.

### Structures

Going-to-the-Sun Road itself, along with its associated minor structures of all types, is counted here as a single structure. Counted with the road are all the culverts, guardwalls, and other structures not listed below individually.

Among the most significant aspects of the Going-to-the-Sun Road are the approximately 40,000 feet of historic, crenelated stone guardwalls that line much of the route. Masonry construction, including sometimes massive retaining walls, was a major aspect of road construction. Native stone salvaged from excavation (mainly buff limestone, red argillite and green argillite) was used throughout, and masonry beds were rigorously inspected to avoid any sense of regularity in the courses.

Two distinct types of construction are evident: rubble construction with a random top course, and rubble construction with a boulder top course with no longitudinal joints. The second type is more prevalent. Both are approximately 18 inches high, with six-inch high parapets about five feet long, spaced every 9 to 12 feet. The walls are typically 18 inches thick. The experience of constructing the guardwalls at Glacier was formative for the standardization of construction details for the national parks system. However, it should be noted that numerous sections have been repaired or replaced over time, with the work not always being compatible with the historic appearance.



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- CS5.            Structure:            Avalanche Creek Bridge            HAER#:MT73  
                   Location:            18 miles from entrance            Date: 1935-36  
                   Builder:            NPS/BPR  
                   The Avalanche Creek Bridge is a three-span reinforced concrete slab bridge with a masonry guardrail. The bridge is about 140' long and 34' wide.
- CS6.            Structure:            Logan Creek Bridge            HAER#:MT75  
                   Location:            21 miles from entrance            Date: 1926-1927  
                   Builder:            NPS/BPR  
                   The Logan Creek Bridge was originally a one span bridge; flooding in 1926 caused a second span to be added in 1927. It is now a two-span continuous reinforced concrete bridge with a span of 53'. Spans, abutments and piers are reinforced concrete with masonry veneer of local stone.
- CS7.            Structure:            West Side Tunnel            HAER#:MT76  
                   Location:            24 miles from entrance            Date: 1926  
                   Builder:            NPS/BPR  
                   The West Side Tunnel is cut into an overhanging rock cliff. The tunnel has a concrete deck and was originally 192' long, 30' wide, and 18' tall. Within the tunnel are 3' sidewalks on either side and two large openings which provide ventilation and scenic views out into McDonald Valley and Heaven's Peak. The openings have porches, or galleries, that extend to the cliff edge and are enclosed by a stone wall. The tunnel was widened and lined with concrete in 1968; this alteration has not significantly altered the experience of the tunnel as an element of the overall historic district.
- CS8.            Structure:            Granite Creek Culvert            HAER#:MT77  
                   Location:            26 miles from entrance            Date: 1926  
                   Builder:            NPS/BPR  
                   The Granite (Alder) Creek Culvert and retaining wall most likely consist of a reinforced concrete slab with masonry facade, but may contain true arch construction. The retaining wall is about 20' high and was required here to support the full width of the road.
- CS9.            Structure:            Haystack Creek Culvert            HAER#:MT-78  
                   Location:            26 miles from entrance            Date: 1926  
                   Builder:            NPS/BPR  
                   The Haystack Creek Culvert is a reinforced concrete slab with a masonry facade. The arched facade is 12' high and 16' wide. The log guardrail mounted on the masonry retaining wall replaces the original masonry guardwall.
- CS10.           Structure:            Triple Arches            HAER#:MT-79  
                   Location:            29 miles from entrance            Date: 1926-28  
                   Builder:            NPS/BPR



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**8. STATEMENT OF SIGNIFICANCE**

Certifying official has considered the significance of this property in relation to other properties: Nationally:

X Statewide: \_\_\_ Locally: \_\_\_

Applicable National

Register Criteria: A X B \_\_\_ C X D \_\_\_

Criteria Considerations

(Exceptions): A \_\_\_ B \_\_\_ C \_\_\_ D \_\_\_ E \_\_\_ F \_\_\_ G \_\_\_

NHL Criteria: 1, 4

NHL Theme(s): III. Expressing Cultural Values

5. Architecture, Landscape Architecture, and Urban Design

VII. Transforming the Environment

3. Protecting and Preserving the Environment

Areas of Significance: Landscape Architecture  
Transportation  
Politics/Government

Period(s) of Significance: 1921-1952.

Significant Dates: 1921, 1923, 1924, 1925, 1926, 1928, 1933, 1937, 1952.

Significant Person(s): N/A

Cultural Affiliation: N/A

Architect/Builder: Goodwin, George; Vint, Thomas; Kittredge, Frank; Emery, A.V.; Davidson, Ernest; Bureau of Public Roads; National Park Service

NHL Comparative Categories:

XVII. Landscape Architecture

XVIII. Technology (Engineering and Invention)

B. Transportation

XXXII. Conservation of Natural Resources

C. The Conservation Movement Matures. 1908-1941

6. Origin and Development of the National Park Service

**State Significance of Property, and Justify Criteria, Criteria Considerations, and Areas and Periods of Significance Noted Above.**Summary

The Going-to-the-Sun Road Historic District meets National Historic Landmark Criterion 1 for its association with the American park movement. The initiation of "landscape engineering" that employed advanced engineering combined with landscape architectural design and concern for the preservation of scenery was an essential step in making large scenic reservations accessible without unduly marring landscape scenery or natural systems. The Going-to-the-Sun Road Historic District also meets National Historic Landmark Criterion 4 as an exceptionally valuable example of American landscape architecture, specifically as a distinctive and outstanding example of "landscape engineering" that blended the practices of civil engineering and landscape architecture. The Going-to-the-Sun Road Historic District is also nationally significant in the history of technology (transportation) because of its unprecedented engineering and its place as a link in the Park-to-Park Highway, first advocated by Stephen Mather in 1915.

More than any park road project, Going-to-the-Sun Road embodied Stephen Mather's evolving hopes and policies for developing the national parks as a coordinated system. Crucial not only to the future development of Glacier National Park, Going-to-the-Sun Road erased the single greatest deficiency in Mather's Park-to-Park Highway route, completing that early ideal of an "interstate highway system." Although there are other interesting examples of Park Service/Bureau of Public Roads design of this period and later, no other road combines the historic associations, the artistic and engineering significance, and the excellent state of preservation of Going-to-the-Sun Road.

The National Park Service began construction on Going-to-the-Sun Road in 1921, and in 1924, as increased appropriations were made available by Congress, the Bureau of Public Roads was asked to provide assistance on the project. In 1928 the western section of the road was completed to Logan Pass, and in 1933 the road was officially opened, although construction and improvements continued. By 1937, the principal bridges, tunnels, and other structures of the road were all complete. The final paving contracts, however, were not entirely finished until 1952.

When it was begun, Going-to-the-Sun Road was the most ambitious road construction project ever undertaken by the Bureau of Public Roads and the National Park Service. The extreme terrain and conditions, as well as the newness of the administrative agreement between the two federal bureaus, made the road a laboratory of innovative road engineering practices and policies. While building Going-to-the-Sun Road, the Park Service and the Bureau of Public Roads developed the construction standards and the cooperative administration that characterized future road construction not only in national parks, but on other federal lands and after 1933 in state parks as well.

In both civil engineering and landscape architecture, the design and construction of Going-to-the-Sun Road also indicated a need to reassess the professional capacities of the Park Service.

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Up until 1924, vague commitments to avoid "gridironing" the parks with roads and to "harmonize" construction work with park scenery had not been seriously tested. It was at Going-to-the-Sun Road that the interbureau arrangement between the Park Service and the Bureau of Public Roads was first initiated in 1924. The experience of surveying and constructing the road shaped the subsequent partnership between the two bureaus. The road also became one of the greatest products of that partnership: a prototype of the successful preservation of scenery through the implementation of the most advanced engineering. The decision of how to locate the western approach up to Logan Pass, in particular, demanded that Park Service landscape architects involve themselves directly in fundamental civil engineering decisions. The Glacier road (and the \$51,000,000 "second program" of road construction that followed it) demanded that the Park Service produce "landscape engineers" in fact as well as in name.

The Going-to-the-Sun Road Historic District is significant under National Register Criterion A for its association with the American park movement. The District is also significant under National Register Criterion C as an example of American landscape architecture, specifically as a unique and outstanding example of "landscape engineering." The Going-to-the-Sun Road Historic District is also significant under Criterion C as an example of transportation engineering.

### Historic Context

Stephen T. Mather, the first director of the National Park Service, began calling for more and better park roads as soon as he arrived in Washington in 1915. Mather recognized that the "the great flow of tourist gold" that brought prosperity to Western towns and cities followed the routes of improved highways.<sup>1</sup> That prosperity, in turn, created vital local constituencies in favor of national parks, which were identified (with highways) as instruments of local progress. Once national parks were perceived as co-agents of this economic impetus, Mather knew that the Park Service would be likely to receive the support necessary to accomplish its primary purpose: preserving extraordinary places from other forms of (non-park) development, especially dam construction, logging, and grazing. The limited construction of roads, therefore, more than any other aspect of park development, would strengthen and validate the goal Mather described as the "complete conservation" of national park areas.

Approaches and connections to national parks, however, were fared better than roads in the parks themselves in the early 1920s. With the passage of the Federal-Aid to Highways Act in 1916, Congress had authorized \$75,000,000 to be distributed to state highway authorities over a five-year period. The Department of Agriculture administered the money through its Office of Public Roads, which reorganized in 1918 as the Bureau of Public Roads.<sup>2</sup> While the Bureau of Public Roads subsequently spent millions of dollars building highways in national forests, Congress failed to fund any road construction at all in national parks in 1919 and

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<sup>1</sup>In 1925 Mather described a "great flow of tourist gold...adding new life to communities unprogressive for years. It is a particularly dependable annual source of income for many Western States." Department of the Interior, National Park Service, 1925 Annual Report, 1.

<sup>2</sup>Bruce E. Seely, Building the American Highway System: Engineers as Policy Makers (Philadelphia: Temple University Press, 1987), 46-59.

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1920, a condition which had reduced Park Service chief engineer George E. Goodwin's activities to "gathering of data and the preparation of plans . . . for future operations."<sup>3</sup> In 1921, an exasperated Mather wrote in an article describing the "ideals and policies" of his bureau that "definite projects [had] been laid out by the Service in all the larger parks calling for road building, but up to the present time no substantial funds have been available to carry them out."<sup>4</sup>

Although regular appropriations in 1921 had allowed at least for the initiation of several important park road projects, in 1923 Mather still noted with irritation that "the most urgent need of the national parks at this time is for new roads . . . to measure up to the high standards of the roads being constructed to their boundaries by various states, either with or without federal aid." He estimated that the 60% of park visitors who arrived in parks by car did so "along excellent roads" through national forests, only to see them turn to narrow, rutted lanes at park boundaries. The Bureau of Public Roads assured that the new state highways, even when not paved, featured high crowns, functioning ditches, and reasonable grades. Mather was acutely aware that national park roads suffered by comparison. He considered them inadequate, incomplete, and also dangerous considering the cavalcades of automobiles--over 270,000 in 1923--that rumbled up to park gates thanks to improved state highway systems.<sup>5</sup> By 1923, however, Mather had begun to convince even reluctant members of Congress that national parks, like state highways, warranted substantial investment of federal funds. In 1924, Congress authorized \$7,500,000 for road construction in national parks.

In the meantime, planning and reconnaissance for park road construction had proceeded under chief engineer George E. Goodwin. Goodwin, an experienced civil engineer at age 42, joined the Park Service during its first year of operations in 1917. During the next few years, he investigated and developed a list of the most desirable road projects, including the Carbon River Road in Mount Rainier, the Middle Fork Road (the Generals Highway) to the Giant Forest in Sequoia, and the Transmountain Highway (Going-to-the-Sun Road) across the Continental Divide in Glacier. In 1921, limited funding allowed all three of these projects to get underway, but road construction presented difficulties enough in mountainous terrain, where contractors faced high labor and mobilization costs and short construction seasons. Inconsistent and inadequate appropriations exacerbated the problems and made essential multi-year contracts impossible to plan. Progress was slow, but by the end of 1922 contractors had completed about five miles of the Carbon River Road at Mount Rainier. Four miles of the Middle Fork Road were graded at Sequoia using park "force account" (temporary) labor. And

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<sup>3</sup>Goodwin's "temporary office" in Portland was closed in 1920, and the engineer was transferred to serve as acting superintendent at Glacier. Department of the Interior, National Park Service, 1920 Annual Report, 90-93.

<sup>4</sup>Mather, "Ideals and Policy," 81.

<sup>5</sup>Department of the Interior, National Park Service, 1923 Annual Report, 9-10.

at Glacier, where the Transmountain Highway apparently was a priority, 17 miles of road were under construction in two separate projects.<sup>6</sup>

But in 1924, when the Park Service finally received authorization to undertake a major campaign of road construction, Stephen Mather's reaction appears not to have been one of jubilation as much as anxiety. He knew that the damage to the parks he had worked so hard to preserve could be catastrophic if road plans were ill conceived. No other aspect of park planning threatened greater impacts, and Mather lacked confidence in the ability of his professional staff to successfully administer demanding road projects. Since being created in 1918, the "civil engineering" and "landscape engineering" divisions of the Park Service had not cooperated to a great degree. Located in Portland and Los Angeles, the geographic distance reinforced the still separate approaches of the traditional road builder, George Goodwin, and the chief landscape architect at the Park Service, Daniel R. Hull. By 1924, as the huge increase in road budgets was anticipated, all Park Service procedures and personnel for managing large construction projects were under comprehensive review.

Mather's anxieties regarding park road construction manifested themselves in the many reassurances he made to Congress and in his annual reports. From the early 1920s on, he repeatedly stated that the Park Service would not "gridiron the parks" with unnecessary or poorly planned roads. "There is danger to our parks through injurious road building," he avowed in 1922, "our purpose is to construct only such roads as contribute solely toward accessibility of the major scenic areas by motor without disturbing the solitude and quiet of other sections."<sup>7</sup> He also began to describe the role of Park Service landscape architects in "landscape preservation," noting that "the landscape division" had been "confronted with greatly increased problems . . . due to the road development program." By 1925 the landscape division could no longer afford to ignore park road construction. They now had the difficult task, Mather reminded them, "of fitting these road developments into the landscape with the least marring of native beauty."<sup>8</sup>

Although he publicly expressed confidence in his professional staff, already in 1924 Mather was making serious inquiries regarding the feasibility of having the Bureau of Public Roads directly administer all road projects within national parks. But as Mather continued his investigations and considerations regarding a potential working agreement with the Bureau of Public Roads, events overtook him. At Glacier National Park, work on the Transmountain Highway had continued since the first funds were made available in 1921. The new road appropriations made available in 1925 put the project, which continued to be a priority, on an accelerated schedule. Crucial choices regarding route selection and contract specifications could no longer wait. Over the next several years, the Glacier highway project tried the efficacy of Park Service "landscape engineering" and tested Mather's determination to make good his reassurances that park road development would not unduly mar landscape scenery.

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<sup>6</sup>Department of the Interior, National Park Service, 1922 Annual Report, 156.

<sup>7</sup>Department of the Interior, National Park Service, 1922 Annual Report, 21.

<sup>8</sup>Department of the Interior, National Park Service, 1925 Annual Report, 18.

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In the process of building the Glacier Transmountain Highway (later Going-to-the-Sun Road), Mather and his staff devised the basic procedures for what became an interbureau agreement with the Bureau of Public Roads.

The first suggestion for a transmountain automotive route through Glacier was made in 1910 by Robert B. Marshall, the chief geographer of the Geological Survey who five years later would briefly serve as "general superintendent" for national parks. Marshall visited Glacier just after Congress created the park and recommended that a north-south route be located that would begin at Belton (now West Glacier), follow the west side of Lake McDonald, and from the north end of the lake traverse the Continental Divide and connect with the Waterton Lakes near the Canadian border. This road bisecting the length of the park was only one part of Marshall's ambitious proposals in 1910; he recommended a total of 213 miles of "first-class road, with good permanent surface at an estimated cost of two million dollars." Other aspects of his plan called for trails, fire towers, and a telephone system.<sup>9</sup> Marshall gave no indication why he believed Congress might spend \$2,000,000 on a road system for Glacier when the total amount appropriated for all expenses in all national parks that year was under \$75,000.<sup>10</sup> In 1911, the Department of the Interior sent another investigator, Edward A. Keyes, who proposed a less ambitious circuit drive around Lake McDonald. Nothing came of either scheme.

But local park promoters, elected officials, and commercial clubs were actively seeking increased appropriations for their park, as was often the case in the early 20th century. Leading citizens of the nearby communities of Whitefish, Kalispell, and Columbia Falls had been instrumental in the original legislative campaign to create the park, and with the achievement of that goal they now pressed for highway construction funds. In the summer of 1914, the secretary of the Kalispell Chamber of Commerce, P.N. Bernard, organized the Interstate Wonderland Trail Association, a good roads group boosting an improved highway from Duluth to the Puget Sound. Representing communities from Minnesota to Washington, the route's promoters noted that this "national park transcontinental highway" would be one of the most "direct and beautiful" ways across the country, and that it would go through both Yellowstone and Glacier on its way to Mount Rainier. They also noted that, as of 1914, the route was "practically open to travel, except that portion through Glacier National Park." The association, which represented communities that together had spent hundreds of thousands of dollars improving roads locally, specifically sought \$500,000 in federal funds to complete an east-west highway over Gunsight Pass in Glacier. "As the matter now stands," the boosters complained, "Glacier National Park is a barrier to interstate motor traffic." With no motor route through the mountains, the park's potential for diverting the tourist gold into their communities went unrealized.<sup>11</sup>

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<sup>9</sup>R.B. Marshall, "Report on the Glacier National Park in Montana" [1910], Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>10</sup>Mather, *Progress in the Development of the National Parks*, 35.

<sup>11</sup>P.N. Bernard to Franklin Lane, November 4, 1914, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

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In a related effort that summer, the Montana State Highway Commission joined the Kalispell Chamber of Commerce and the Columbia Falls Commercial Club in memorializing Congress for "the construction of an east and west highway through Glacier National Park." Senator Henry L. Myers (Montana), who also happened to be chairman of the Committee on Public Lands, responded by pressuring Secretary Lane to "comply with the wish of the citizens of Montana" and find a way to fund road construction out of the Interior budget.<sup>12</sup> The following spring, the State Legislature and governor of Montana issued a joint memorial urging the federal government to make an appropriation to start the construction of an east-west highway through Glacier that would "connect with highways which are now open for travel [on either side of the park] from the Great Lakes to the Pacific Coast."<sup>13</sup> Upon his arrival in Washington, Mather was kept busy responding to memorials, resolutions, and endorsements from Congressmen, local businessmen, and civic groups all urging some form of east-west automotive route through Glacier National Park.

Noticeably absent from the ranks of the good roads advocates was Louis W. Hill, president of the Great Northern Railroad, who up to that time had financed and controlled the development of the park as its sole concessioner. Glacier had been Louis Hill's park. He had helped sway Congress to create the reservation in 1910, and by the time he incorporated the Glacier Park Hotel Company as a subsidiary of the Great Northern five years later, he had spent at least \$1,500,000 on a system of lodges, chalets, and connecting roads and trails. His largest investments had built the Glacier Park Hotel (outside the park near the East Glacier rail station), the Many Glacier Hotel (within the park on its east side), and a series of back country chalets set along the park's growing system of saddle trails.<sup>14</sup> The hotels and chalets, of Alpine inspiration, today are among the finest buildings in the national park system. The hotel developments in Yellowstone (built by the rival Northern Pacific line) may have provided a precedent, but Hill avoided the melange of architectural styles employed in the larger park to the south. As a group, the surviving Glacier hotels and chalets are a unique example of a single architectural theme carried through in the architectural development of an entire national park.<sup>15</sup>

But Hill's tourists arrived at Glacier on his railroad, and they relied on livery services to transport them via rough roads and horse trails to the elegant service of the Glacier Park Hotel Company accommodations. He may not have considered motor roads a threat (he was an avid motorist himself), but neither had he made ambitious road construction a priority. The wagon roads he had built were on the east side of the park, connecting his major hotels. The most

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<sup>12</sup>Henry Myers to Franklin Lane, September 25, 1914, Glacier National Park, Entry 6, Central Files, RG 79, National Archives, Washington, DC.

<sup>13</sup>"House Joint Memorial No. 10," April 1, 1915, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>14</sup>Sheire, Glacier National Park, 195-197.

<sup>15</sup>The Many Glacier Hotel, the Sperry and Granite Park Chalets, and the Two Medicine Chalet (now the Two Medicine Store) were all made National Historic Landmarks for their architectural significance in 1987. Harrison, Architecture in the Parks, 135-158.

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important of these was a one-lane dirt road that ran through the Blackfeet Indian Reservation east of the park, connecting the East Glacier rail station to St. Mary Lake and the Many Glacier Hotel. The few roads inside park boundaries were built out of park appropriations, although they too had been laid out by Great Northern engineers. By 1915 these included (on the east side of the park) the spur road to the Many Glacier Hotel and a second spur that followed the northern shore of St. Mary Lake for about half its length.<sup>16</sup> A transmountain route connecting the east and west sides of the park did not interest Hill for an obvious reason: his railroad already connected East Glacier with the western entrance to the park at West Glacier, via the Marias Pass on the southern boundary of the park. Automotive tourists arriving on the east side of the park, in fact, paid Hill up to \$15 to haul their vehicles to West Glacier, where they could visit Lake McDonald and then perhaps continue cross country to the Pacific Northwest. The alternative was to drive south (over half way back to Yellowstone) to cross the divide near Butte.

Further complicating the situation, in addition to local civic boosters and the president of the Great Northern Railroad, members of the Montana congressional delegation also had special interest in developments at Glacier. Senator Thomas J. Walsh, chairman of the Committee on Mines and Mining, enjoyed a private summer residence on Lake McDonald, as did Senator Burton K. Wheeler. Walsh also had personal connections to concessioners at Yellowstone. In 1916, when Mather reorganized Yellowstone concessions (removing some of Walsh's associates) Walsh attempted to remove Mather from the Department of the Interior. The two men became the bitterest of enemies; but Walsh still pushed for Glacier appropriations, at least those that served his general interests, including funds for improved roads.<sup>17</sup>

A number of different groups pressed for road construction in Glacier even before the creation of the Park Service. But at other parks as well, especially in the Sierras, tourists and automobile clubs clamored just as loudly for improved new roads that would open parks to them. In 1914, Secretary Lane had responded to the pressure by entering into a cooperative agreement with the Office of Public Roads (the predecessor to the Bureau of Public Roads) to prepare preliminary surveys and plans for park road projects. Over the next two years, Office of Public Roads engineer T. Warren Allen (named "chief of division of national park roads") investigated national park road projects in Glacier, Sequoia, and Yosemite national parks.

When Mather arrived at the Department of the Interior, he invited Allen to speak on his work at the Berkeley national park conference in the spring of 1915. Allen's performance at Berkeley helps explain Mather's subsequent misgivings about allowing the Bureau of Public Roads into national parks. Allen went out of his way to assure the park managers that "the problems encountered within the park areas are very similar though not altogether identical with those encountered in the [national] forests." In both cases, the construction of roads was

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<sup>16</sup>Kathryn Steen, "Going-to-the-Sun Road" (Historic American Engineering Record No. MT-67, 1992), 6-7. The Historic American Engineering Record recorded the Going-to-the-Sun Road in 1990-91. These records are available through the Library of Congress.

<sup>17</sup>Shankland suggests that Walsh, along with the disgruntled Robert B. Marshall, were among the causes of Mather's nervous breakdown in 1917. 109, 122-23. See also: Albright and Cahn, Birth of the National Park Service, 46-49; Ise, Our National Park Policy, 180.

necessary, first, "in order that these tracts may not be obstacles blocking the free movement of traffic between adjoining areas." He continued in this vein to suggest that park roads should not only be convenient through routes for commercial traffic, but should also provide access to "valuable salable mature timber." Although Allen eventually added that park roads should lead to "hotel and camping sites and features of beauty," he clearly did not appreciate the critical difference between national forests and national parks. This attitude had been commonplace within the Department of the Interior up until 1909, but at the national park conference of 1915 it amounted to heresy. The ongoing campaign to create a national parks bureau depended entirely on the recognition that national parks should be treated differently from national forests, and therefore should be managed by a new park bureau, not the Forest Service.<sup>18</sup>

Soon after the Berkeley conference, Mather decided to promote the "Park-to-Park Highway" campaign with all his enthusiasm. The idea of promoting an interstate automotive route connecting the Western parks in a great loop had first been suggested to him by Denver area boosters at the dedication of Rocky Mountain National Park in 1915. They had taken the initiative that summer when a group of them clattered off on the 500-mile trip north to Yellowstone after the ceremonies at Rocky Mountain. The next portion of the route, from Yellowstone through Glacier to Mount Raimier, was already being promoted by the Interstate Wonderland Trail Association. Other groups all over the west, from the Southern California Automobile Association to the Washington Good Roads Association, promoted routes in and between national parks. The National Park-to-Park Highway Association, organized in Yellowstone in 1916, posted signs and lobbied for road improvements, especially between Yellowstone and Glacier. In 1917 the National Parks Highway Association, headquartered in Spokane, mapped and posted signs for the "National Park" route connecting Glacier to Mount Rainier; they then extended the route south to Crater Lake. Mather felt that the "park-to-park system," including the highways of the national parks themselves, would be "the greatest scenic highway in the world."<sup>19</sup> He continued to work with numerous park road boosters, who in 1918 assembled at Yellowstone to form the National Park Touring Association, a conglomeration of groups from 12 Western states dedicated to promoting "a composite road system leading to and connecting all the national parks." In 1919, the National Park-to-Park Highway Association began holding annual conventions of park road groups. After the route was officially designated in 1920, thousands of maps and brochures of a 6,000-mile park-to-park system were printed with the assistance of the Park-to-Park Highway Association, the American Automobile Association, and the National Highways Association in Washington, DC.<sup>20</sup>

In 1918, Mather himself traveled much of the proposed Park-to-Park Highway route in his chauffeured Packard. Although he reported that road improvements were "needed

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<sup>18</sup>Department of the Interior, Proceedings of the Berkeley Conference, 24-33.

<sup>19</sup>Department of the Interior, National Park Service, 1917 Annual Report, 19-20.

<sup>20</sup>Department of the Interior, National Park Service, 1922 Annual Report, 18.

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everywhere," by that time most of the national parks offered some access for tourists in cars.<sup>21</sup> The Grand Canyon, Rocky Mountain, and Crater Lake all at least had some automotive routes that made them legitimate (if not convenient) components of the park-to-park system. The Mountain Highway connected Tacoma and Mount Rainier, and the Government Road extended from the entrance of the park to Paradise Valley. At Yosemite, one of Mather's earliest acts of personal generosity to the park system was his gift of the Tioga Road, an old turnpike crossing the park from east to west, which he purchased from its private owners (he raised about half the funds from fellow enthusiasts) and donated to the park. Several California auto clubs then contributed to improve the road to make it usable for their machines.<sup>22</sup> The Yellowstone concessioners had resisted the automobile, and it was true that the Grand Loop of that park may have needed modernizations; but by 1915 the largest national park offered access to 350 miles of roads to automotive tourists. In 1916 Mather lifted the few remaining restrictions on allowing cars in parks and began lowering the previously exorbitant motor fees. That year Mount Rainier, Yosemite, and Yellowstone all sold between 3,000 and 4,000 motor permits. The total number of permits issued rose from about 4,200 in 1914 to almost 54,000 in 1918; but the increase only hinted at what was to come.<sup>23</sup>

At Glacier, however, Louis Hill continued to exact tribute to transport vehicles over the Continental Divide. The park itself still had practically no roads, and without a transmountain connection it remained "the last unconstructed link" in the park-to-park system. There was no site even for a Park Service headquarters area until Mather purchased some land himself and donated it to the park. Significantly he planned the new headquarters on the west side, near the West Glacier entrance, despite the fact that the vast majority of park visitors still arrived on the east side and stayed at Louis Hill's hotels. Mather had his own plans to develop Glacier, and the Transmountain Highway comprised the essential first step not only for the park, but for the entire park system.

Shortly after joining the Park Service in 1917, George Goodwin was assigned to Glacier to act as superintendent. While filling what had been an unexpected vacancy, the engineer had the opportunity that summer to perform reconnaissance surveys for road proposals. Although a north-south road through the park was still under consideration, Albright (acting as director while Mather remained hospitalized from his 1917 collapse) clarified his mentor's priorities: an east-west road would "join the highway systems of the two sides of the park" and would "form a very important link in the park-to-park highway system" by affording motorists "a crossing of the range without the difficulties and expense of shipping their cars."<sup>24</sup> The following year Goodwin was made "chief engineer" of the Park Service, responsible for planning and supervising road and trail projects. Although Congress appropriated no funds for construction, the engineer began preliminary surveys in a number of parks during his first

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<sup>21</sup>Department of the Interior, National Park Service, 1919 Annual Report, 20-22.

<sup>22</sup>Shankland, Steve Mather, 62-63, 78-79, 148.

<sup>23</sup>Mather, Progress in the Development of the National Parks, 30: Department of the Interior, National Park Service, 1921 Annual Report, 281.

<sup>24</sup>Department of the Interior, National Park Service, 1917 Annual Report, 43.

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year in his new position. "The most important project to be developed," he reported that year, was "a transmountain road connecting the east and west sides of Glacier National Park." Goodwin had spent that fall making preliminary surveys for the route, and that winter he developed quantities and estimates for construction.<sup>25</sup>

The terminal locations for Goodwin's 1918 survey had been fixed by initial park developments on both sides of the mountains. On the west side, a two-mile park road led from West Glacier to the foot of Lake McDonald, where a small resort community named Apgar had grown up since the 1890s. From that point launches carried tourists to the Glacier Hotel (1914), a hotel and cabin complex run by an independent operator near the head of the lake.<sup>26</sup> The long, straight shore of the narrow glacial lake provided a logical and level route for the first portion of an east-west crossing of the park; the location of the hotel made it desirable for the planned route to follow the lake's eastern shore. Across the mountains on the east side of the park, the spur road that Louis Hill had begun along the north shore of St. Mary Lake provided a similarly convenient and straight route for approaching the Continental Divide from the east, roughly near the center of the park. By 1918 Mather had determined that the transmountain project would begin with the construction of a road along the east shore of Lake McDonald, and that the spur road along St. Mary Lake would be extended to the Going-to-the-Sun Chalets near the head of that lake.<sup>27</sup>

These routes, following the long, narrow lakes on either side of the park, offered straight and level access to the park interior along a roughly east-west line. The real question for Goodwin in 1918 was which pass over the Continental Divide should be selected to connect the roads on either side. In 1915, P.N. Bernard and the Kalispell Chamber of Commerce had invited the geologist and lecturer Lyman B. Sperry to suggest the most appropriate route over the divide. Sperry had proposed Gunsight Pass, a high pass near the Sperry Glacier due west from the head of Lake McDonald.<sup>28</sup> Bernard and the other early transmountain road boosters continued to advocate the Gunsight Pass option, which would have descended on the east side of the park along the St. Mary River to St. Mary Lake. George Goodwin, however, felt that Logan Pass offered practical advantages. A trail over Logan Pass had just been completed in 1918 providing the first real connection between the two sides of the park, and Goodwin had observed certain obvious benefits to the route. Logan Pass was the lowest pass with the most gradual approaches in the immediate area. Since the road would generally have southern and western exposure, it would be clear of snow earlier in the season. In 1915 the Office of Public Roads engineer, T. Warren Allen, had also advised that Logan Pass would eventually

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<sup>25</sup>Department of the Interior, National Park Service, 1919 Annual Report, 23.

<sup>26</sup>The Glacier Hotel (later renamed the Lake McDonald Lodge) was built in 1913-1914 on the site of an 1890s hotel establishment. Like Louis Hill's contemporary lodges, the wooden lodge is Alpine in inspiration. It was acquired by the Park Service in 1930, and it was made a National Historic Landmark for its architectural significance in 1987. Harrison, Architecture in the Parks, 159-171.

<sup>27</sup>Department of the Interior, National Park Service, 1918 Annual Report, 68-69.

<sup>28</sup>Steen, "Going-to-the-Sun Road," 9-10.

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be the best location for an east-west connection in the park. The two engineers, with similar training and backgrounds, both emphasized practical justifications for the Logan Pass route.

In his 1918 preliminary survey, Goodwin located a route that proceeded from the head of Lake McDonald (near the Glacier Hotel) northwest along McDonald Creek at an average grade of one percent. At the confluence of McDonald and Logan creeks, the route turned west, up the Logan Creek Valley, and ascended about 2,600 feet to Logan Pass (elevation 6,646 feet). An average grade of six and a third percent could be maintained on this ascent through the construction of "long loops and switchbacks . . . taking advantage of the various level places upon which to turn." The proposed route crossed Logan Creek seven times in the process.<sup>29</sup> Thomas Vint later asserted that the route would have required the construction of 15 switchbacks in Logan Creek Valley.<sup>30</sup> Vint bemoaned the potential destruction of one of the most scenic valleys in the park, but for Goodwin, such "spectacular" engineering could be an attraction in itself. In his later textbook on "Mountain Highway Location," Goodwin observed that "it is oftentimes desired to have the location a spectacular one, and in some cases . . . the road themselves become quite wonderful because of their being located so that they offer certain spectacular effects." Such effects included "benching of the road out of the side of a cliff," the "construction of half-tunnels . . . and the use of overhead loop crossings." Multiple switchbacks, as well, could be an attraction "in making ascents from the valleys to the tops of ridges" because looking down at certain points "several elevations of the road are often visible."<sup>31</sup> "Spectacular effects" that drew attention to road engineering rather than scenery, however, would prove incompatible with Mather's goals for the "preservation of landscape scenery." Landscape engineering demanded construction that would maintain an understated presence in park landscapes.

On the east side of the park, Goodwin's 1918 route descended the West Fork of Reynolds Creek through a shorter series of switchbacks at an average grade of six percent, emerging at the shore of St. Mary Lake near the Going-to-the-Sun Chalets. The entire road, about 50 miles from one park entrance to the other, was to be graded (but not paved) to a width of 20 feet. The maximum grade would be eight percent, and the minimum radius of curvature a tight 50 feet. "Rustic log bridges or culverts" of course were specified, and "brush" was to be cleared in a corridor up to 50 feet wide, depending on the topography. But like T. Warren Allen, Goodwin did not necessarily distinguish the requirements of a national park road from those of any mountain road traversing scenic regions. Goodwin claimed the transmountain route, a "first-class highway or automobile road," would "meet every requirement for park

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<sup>29</sup>George Goodwin to A.J. Breitenstein, August 17, 1921, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>30</sup>Herbert Evison, Interview with Thomas Vint, 1960, p. 12. Transcript in Glacier National Park Archives.

<sup>31</sup>W.W. Crosby and George Goodwin, Highway Location and Surveying (Chicago: Gillette Publishing Company, 1928), 182-83.

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travel or commercial hauling"--requirements that he assumed were more or less identical.<sup>32</sup> Economic and practical considerations remained Goodwin's primary concerns, even if he acknowledged that the road when built would be "one of the most scenic, if not the most scenic, in America." He may have been aware of the scenic potential of the Transmountain Highway, but that awareness had not led him to significantly adapt or tailor his professional practice to meet the new and evolving needs of the Park Service.

Park appropriations over the next two years, however, remained at levels that precluded road construction. During that time, Goodwin served a second tour as Glacier's superintendent, in part because lack of funding forced the engineering office to temporarily suspend operations.<sup>33</sup> While stationed in the park he was able to supervise the construction of a new bridge over the Middle Fork of the Flathead River at West Glacier, but he did not make any other progress on the transmountain project. "Paradoxically as it may be," the engineer reported of his second superintendency of the park, "the one vital missing link that exists in the Park-to-Park Highway is this transmountain road, which will some time become the strong link of the chain."<sup>34</sup>

That May, Goodwin was recalled to Portland where he went back to work with a small staff in an office in the Couch Building. The 1921 budget for Glacier was almost doubled to \$195,000, with \$100,000 dedicated specifically to the construction of the Transmountain Highway. The money would be available beginning July 1, and Goodwin immediately prepared grading contracts for the first portion of the road along Lake McDonald. Bids were scheduled to be opened that August. In the meantime clearing began on the Lake McDonald route using park force account labor.<sup>35</sup>

With construction underway in 1921, local concerns over the practicality of the route immediately surfaced. Good road boosters joined by other local interests now questioned the wisdom of building the much needed transmountain motor road within the national park at all. That April, J.M. Hyde published a scathing editorial in the Cut Bank Pioneer Press titled "That Fairy Highway Through Glacier National Park." Hyde, the Glacier County Commissioner, claimed that the entire project was a plot by the Great Northern Railroad to prevent a usable automotive route through the mountains from ever being completed. Louis Hill, according to the furious county commissioner, backed the entire scheme in order to retain his lucrative business shipping about 8,000 vehicles annually between East Glacier and West Glacier. The Park Service had been duped into undertaking a Quixotic and expensive

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<sup>32</sup>George Goodwin to A.J. Breitenstein, August 17, 1921, Glacier National Park, Central Files, Entry 6. RG 79, National Archives, Washington, DC.

<sup>33</sup>Department of the Interior, National Park Service, 1920 Annual Report, 90.

<sup>34</sup>George E. Goodwin, Glacier National Park, Annual Report, Glacier National Park, General Records of the Engineering Division, Entry 22, RG 79, National Archives, Washington, DC; Department of the Interior, National Park Service, 1920 Annual Report, 121.

<sup>35</sup>Department of the Interior, National Park Service, 1921 Annual Report, 54-55, 286. Work also began on the Carbon River Road in Mount Rainier and the Middle Fork Road in Sequoia.

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road through a pass that would be snowbound "ten or eleven months of the year." Hyde wanted a road built parallel to the Great Northern tracks over the lower, far more practical Marias Pass before any scenic road schemes were funded for the park.<sup>36</sup> A.J. Breitenstein, representing the "Yellowstone-Glacier Bee-Line" (one of the interpark highways being promoted since 1918) also wanted to know why the more practical Marias Pass had not been considered as a route for the Park-to-Park Highway. George Goodwin responded with a long (and at times fanciful) explanation of how the Logan Pass route would only be slightly longer, slightly more expensive, and snowbound only one or at most two extra months of the year.<sup>37</sup> Arguments based on the practicality of the Logan Pass route, however, were easily refuted since a road over the lower Marias Pass, although not the scenic route, obviously would be less expensive and easier to maintain.

Fortunately the new park superintendent, J. Ross Eakin, also joined the effort to ease local concerns regarding the value of the Logan Pass road project. Eakin more cogently argued that the two proposed roads (over the Logan and Marias passes) would serve "two distinct purposes." The Logan Pass route, if less convenient, would dramatically complete the Park-to-Park Highway, and it would therefore draw thousands of tourists into the communities surrounding Glacier. The "unspectacular" route would not do this, even if it would serve other useful purposes and would remain open for more of the year. Visiting the Kalispell Chamber of Commerce and other local groups, Eakin reminded businessmen and residents that the purpose of the Transmountain Highway was not just to move local traffic, but to attract tourists from all over the country. Besides, he reassured them, the Park Service would do whatever it could to encourage the Forest Service to build a federal-aid highway over Marias Pass as soon as possible (the proposed route lay almost entirely in the adjacent forest to the south, not in the park). That fall Eakin wrote to Mather assuring him that with the exception of some "non-influential residents" of East Glacier, he had "line[d] up the community solidly for our Transmountain road."<sup>38</sup>

Goodwin continued to oversee construction over the next three years as Congress appropriated \$65,000 for the 1922 construction season and then \$100,000 in both 1923 and 1924. At first work was limited almost entirely to the west side of the park. Contracts for the east side were postponed in 1922 in part because Goodwin wanted to push the west side road from the head of Lake McDonald north and west along McDonald Creek as far as possible. He feared that if the Marias Pass highway were begun (and built far more quickly over that easier route) then Congress would lose interest in the Logan Pass route--unless the road had already been

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<sup>36</sup>J.M. Hyde, "That Fairy Highway Through Glacier National Park, Cut Bank Pioneer Press." April 29, 1921, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>37</sup>George Goodwin to A.J. Breitenstein, August 17, 1921, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>38</sup>J. Ross Eakin to Stephen Mather, October 6, 1921; J. Ross Eakin to Stephen Mather, October 25, 1921, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC. Numerous endorsements of the Transmountain Highway subsequently arrived from chambers of commerce in Kalispell, Missoula, and elsewhere, as well as from local newspapers.

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advanced significantly towards the Continental Divide.<sup>39</sup> In 1922, the first 17 miles of the road were being graded on the west side of the park, along the shore of Lake McDonald and up McDonald Creek. On the east side, grading on the St. Mary Lake portion of the road began the next year. With construction underway on both sides of the divide in 1923, Mather felt that construction would now "be pushed with more speed to completion," although he confessed that if work continued to be funded out of annual park appropriations alone, it would be "a long period of years before it [was] completed."<sup>40</sup>

But after 1924, work would not have to proceed on regular appropriations alone. New funds were not available for the 1924 construction season, but that December Congress appropriated \$1,000,000 for park road construction through a deficiency act. In March, the regular Interior appropriation included an additional \$1,500,000 for road construction and carried the authority to obligate against future appropriations for up to another \$1,000,000. With millions of dollars now available for improving park roads, Mather faced the need of "suddenly expanding the civil engineering forces" of the Park Service. But the director made no such expansion. He claimed there was a scarcity of "competent road engineers with civil-service status" and blamed the problem on an inadequate pay scale; but clearly other concerns had begun to undermine the director's confidence in his bureau's engineering capabilities.<sup>41</sup>

In anticipation of the funds that would soon be available for the Transmountain Highway, Mather went to Glacier during the summer of 1924 to inspect Goodwin's proposed route over Logan Pass. Work on the Lake McDonald and St. Mary Lake portions of the road had progressed; it remained now to complete the final and most demanding sections of the project over the steep ridges of the Continental Divide. Final decisions regarding the location of the route over Logan Pass would have to be made immediately if contracts were to be let for the 1925 construction season. The Transmountain Highway promised to complete the entire Park-to-Park Highway, and it would make Glacier a legitimate component of the 20th-century national park system. Considering the spectacular views from the approaches to Logan Pass, there were expectations that the Glacier road would be the most spectacular scenic drive in the country. But the potential for failure was just as great: if the road permanently scarred the scenic heart of Glacier National Park, or if the project were merely bungled through inept management, the reputation of Park Service professionalism would never recover. Finalizing the location of the route over Logan Pass presented the most important single road-building decision yet faced by Mather and the Park Service.

Daniel Hull, however, did not accompany the director on his visit. In general, the landscape architect had been content to leave the road engineering to George Goodwin. At Glacier during the early 1920s, Hull had been primarily concerned with laying out the West Glacier administrative village, and he made no direct mention of the Transmountain Highway in his

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<sup>39</sup>George Goodwin to Stephen Mather, March 27, 1922, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>40</sup>Department of the Interior, National Park Service, 1923 Annual Report, 10. 41.

<sup>41</sup>Department of the Interior, National Park Service, 1925 Annual Report, 17. Two out of three of Goodwin's assistants in Portland had in fact resigned for higher paying jobs in 1923.

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annual reports. Although he inspected Glacier road construction in the fall of 1923, his brief memorandum to Mather on the subject failed to rise above vague reassurance and platitudes. Hull favorably assessed the built portion of the road along Lake McDonald and McDonald Creek, advising the director that so far Goodwin had given "careful thought . . . to the matter of securing maximum value from the landscape point of view." He worried about the impact of construction around Logan Falls, however, and closed his report by postulating that "each park [road] project . . . should be considered with the primary thought of protecting [the] . . . landscape, and at the same time make it accessible to the public."<sup>42</sup> The next year Hull made what he called "a study of road conditions" at Glacier and suggested some "changes in future road programs with an idea of better landscape protection."<sup>43</sup> Hull's suggested changes in 1923 and 1924, however, mostly involved removing dead trees from near the road and protecting other trees with "guards placed around the trunks or by the construction of retaining walls" to avoid damaging them during blasting and grading operations. Hull was justifiably preoccupied during these years with his town plans for Yosemite and Grand Canyon, as well as the concessioner lodge developments at Zion and Bryce and his private practice in Los Angeles. Although he advised Goodwin on details and procedures to help minimize the impacts of road construction at Glacier, he apparently did not overly involve himself in more demanding engineering issues such as route location, roadway geometry, and construction standards.

But Mather needed greater assurance that "landscape protection" would be carried out not only in details, but in the more fundamental civil engineering decisions that now loomed large in plans for development at Glacier and almost all the other parks. With newly funded construction only months away, bromides about "the landscape point of view" did not soothe the director's anxieties regarding the high profile Glacier road project. That summer, while Mather arranged to inspect Goodwin's route over Logan Pass himself, Hull was satisfied to have his assistant, Thomas Vint, accompany the director. At the park, Mather spent a day riding over the divide inspecting the preliminary survey route with Goodwin, Vint, and the new superintendent at Glacier, Charles J. Kraebel. Dismounting a few miles west of Logan Pass, the group took in the view of Logan Creek and the summits of the Livingston Range that marked the Continental Divide down the center of the park. Flanked on one side by the huge, almost vertical cliff called the Garden Wall, the green valley of Logan Creek provided the foreground of a stunning panorama of the Glacier high country. The vista captured the very heart of the park: a region containing dozens of lakes and glaciers and scores of jagged, alpine peaks. Then Thomas Vint began describing the effect that building 15 switchbacks up the valley would have on the foreground of the awesome scene they were admiring. Vint felt that it would "look like miners had been in there" if they went ahead with Goodwin's plan. What they should do, he urged the director, was replace the series of switchbacks with a much longer (and more expensive) road that would be carved directly into the rock of the Garden Wall. The roadway would traverse along the steep face of the escarpment, gradually descending for 10 miles, until it could drop down to the road along McDonald Creek in a

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<sup>42</sup>Daniel Hull to Stephen Mather, November 20, 1923, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>43</sup>Department of the Interior, National Park Service, 1924 Annual Report, 152.

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single switchback. If this relatively straight roadway could be benched into the sedimentary rock of the Garden Wall all the way down the valley, the scene below would be preserved completely untouched. The solution was simple, elegant, and certainly more expensive and less practical since it called for a much longer road benched into solid rock for many miles. Mather remained silent. Vint persisted, and risked offending Goodwin further by stating, "This job is important enough for you to hire the best engineer and the best landscape architect in the country to look after; this is a big thing." According to Vint, Goodwin took up the challenge by responding, "Mr. Mather, there is nobody in the United States that knows as much about road building in the mountains as I do."<sup>44</sup>

Goodwin indeed knew a great deal about road building in the mountains; but he had not developed road engineering adapted to the Park Service's need to put scenic preservation above economic and even practical considerations. Goodwin insisted that some form of direct approach up the valley--simply because it was more direct--had to be featured in the final location survey for the transmountain route. Now almost 50 years old, Goodwin embodied confident technical authority and experience. Handsome and silver-haired, he also tended to pomposity in his correspondence and clearly held high opinions regarding his own abilities. Vint, on the other hand, was short and already slightly overweight, although he possessed tact and humor that his older colleague perhaps lacked. He was still in his twenties, and his professional experience had been limited to a few years with California design offices as a draftsman, and even "pick and shovel work, grading and planting" with nurseries and contractors in Los Angeles.<sup>45</sup> But Vint also had spent the last two years working for Hull as a Park Service landscape engineer at Yosemite and in Los Angeles. Vint was making his career as a Park Service professional, while Goodwin's attitudes had been shaped through earlier experience in federal dam construction and Army road engineering. Mather now faced a choice regarding the fate of the Logan Creek Valley and the Transmountain Highway; the choice also bore directly on the future roles of professionals within the Park Service.

Mather, always emotional regarding park issues, grew visibly angry. He gathered up his horse's reins and with hardly a word moved down the trail before his companions even had time to get mounted. Vint did not see the director again for two days. Neither Goodwin nor Vint realized it, but Mather was probably already deciding the course he would take not only on the Glacier project, but for future park road projects in general.<sup>46</sup>

Several days earlier at Jackson Hole, in fact, Mather had met a young Bureau of Public Roads engineer, Bill Austin, in one of the random and fortuitous encounters that characterized Mather's peripatetic management style. Austin, who possessed the unimpeachable qualification of being a brother Sigma Chi, showed the director some of the national forest

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<sup>44</sup>Herbert Evison, Interview with Thomas Vint, 1960, p. 12-13. Transcript in Glacier National Park Archives.

<sup>45</sup>Thomas C. Vint, Personnel Information Sheet, United States Civil Service Commission, July 1, 1940. Thomas C. Vint Collection, Papers of Charles E. Peterson.

<sup>46</sup>Herbert Evison, Interview with Thomas Vint, 1960, p. 13-14. Transcript in Glacier National Park Archives.

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road work he was supervising nearby. Mather was impressed by the high standards of construction the Bureau of Public Roads employed in their work. After his experience at Logan Pass, Mather sent his Packard back down to Jackson Hole to pick up Austin and bring him up to Glacier for a consultation with Vint. The director wanted to know from an objective engineering standpoint whether Vint's alternative to Goodwin's route had any merit.<sup>47</sup> This unorthodox and personal contact with Bill Austin (so typical of Mather) initiated the collaboration between the Park Service and the Bureau of Public Roads that would be formalized as an interbureau agreement two years later. The agreement has been renewed in various forms to the present day.

Austin and Vint spent several days going over the route and considering whether the Garden Wall option would be feasible. Consultations continued late into the night back at their hotel. Superintendent Kraebel then joined Austin and together they drove back to Yellowstone to consult with Horace Albright, who by now had supplanted Goodwin as the Park Service's chief expert on road policies.<sup>48</sup> Soon afterwards, Mather and Albright officially contacted the Bureau of Public Roads in Washington in order to negotiate a preliminary interbureau agreement. The legendary bureau chief, Thomas H. MacDonald, instructed his deputy chief engineer for the Western states, Laurence I. Hewes, to make the arrangements. Early in September, Frank A. Kittredge, a locating engineer in the road bureau's San Francisco office, received a telegram from Washington telling him to leave immediately for Portland to prepare to undertake preliminary and location surveys for a new route over Logan Pass. He arrived at Glacier and began organizing survey crews on September 11.<sup>49</sup>

If the entire affair seemed rushed, it was because location and preliminary survey work would need to be completed (or nearly so) that fall if construction contracts were to be let in the spring of 1925. Although Kittredge later wrote that "the reconnaissance [had been] completed, [and] the decision made as to the route" by the time he arrived at Glacier, he still was presented with an enormous challenge.<sup>50</sup> Road surveys at this time typically proceeded in three stages, each with a greater level of precision and descriptive information: the reconnaissance, preliminary, and location surveys. Kittredge had to complete the entire preliminary survey and much of the final location work over a 21-mile route if quantities were to be accurately estimated for contract bidders that spring. Winter promised to close in on the high mountain passes within a matter of weeks; precipitous terrain and thick forests assured that survey work would have been difficult under the best of circumstances.

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<sup>47</sup>Shankland, Steve Mather, 157-58.

<sup>48</sup>Herbert Evison, Interview with Thomas Vint, 1960. p. 13-14. Transcript in Glacier National Park Archives.

<sup>49</sup>Frank A. Kittredge, "Trans-Mountain Highway, Glacier National Park, Report to National Park Service," February 5, 1925, p. 3, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>50</sup>Frank A. Kittredge, "The Survey of the Going-to-the-Sun Highway, 1924," 1952, p. 87. Manuscript in Glacier National Park Archives.

But Kittredge had strong qualifications for the job. Born in Minnesota, he had begun his career in his early twenties surveying for railroads in Alaska in 1905 "in country known only to prospectors," and later working as a highway engineer for the Washington and Oregon state highway departments. He received a graduate degree in civil engineering from the University of Washington in 1915. After serving in France, he worked for the Bureau of Public Roads doing reconnaissance and location surveys, often in extremely remote and inaccessible regions.<sup>51</sup> As Vint recalled, the locating engineer was "their man that they sent out on all the trouble jobs . . . . Kittredge could work like a dog."<sup>52</sup> He would need tenacity. The remoteness of the Logan Pass route required long, steep hikes from base camps up to job sites at the beginning of each shift. In order to keep a 32-man survey crew in the field continuously, Kittredge employed up to 135 men at a time in three crews: "one coming, one working, and one going." The long daily climbs "over cliffs and through brush," as well as hazardous working conditions on steep slopes in rain and sleet, "proved too strenuous for many" according to the engineer. In addition to a high rate of turnover, Kittredge had to work with crews that had little or no experience in location surveys. But the additional trouble and expense were necessary to complete the work in time. The crews worked continuously between September 15 and November 10, when the snow became too deep (they had already been working in up to three feet) to allow further work.<sup>53</sup>

In that time, enough topographic information had been gathered for Kittredge to present three alternative schemes to Mather in February. He presented Goodwin's 1918 survey as the first alternative. He pointed out all the shortcomings of the original plan, emphasizing its practical drawbacks: the hairpin turns would be clogged with snow late into the season, the road would be impossible to widen or modernize and would become obsolete, and the switchbacks would require turns with 50-foot radii and grades as high as eight percent. The series of sharp turns assured it would always be a "second-gear road . . . increasing the hazard and decreasing its efficiency." Kittredge also investigated a second route, at chief engineer Goodwin's request, which was a revision of the 1918 survey. This revised route still wound directly up Logan Creek Valley, but employed fewer switchbacks and turning radii were widened from 50 to 100 feet. This alternative would have cost significantly more than the first; but Kittredge concluded that any objections to the original route applied (to a lesser degree) to this revision of it.

The third--and "strongly recommended"--alternative presented in Kittredge's February report described the Garden Wall option that Vint and Austin had initially reconnoitered the previous summer. Since this third alternative "met the requirements more than any other," it was the

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<sup>51</sup>"Frank A. Kittredge," Mather Collection, National Archives, Entry 135, National Archives, Washington, DC

<sup>52</sup>Herbert Evison, Interview with Thomas Vint, 1960, p. 14. Transcript in Glacier National Park Archives.

<sup>53</sup>Frank A. Kittredge, "Trans-Mountain Highway, Glacier National Park, Report to National Park Service," February 5, 1925, p. 8, Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC; Frank A. Kittredge, "The Survey of the Going-to-the-Sun Highway, 1924," 1952, p. 88. Manuscript in Glacier National Park Archives.

only one actually surveyed by Kittredge that fall. The surveyed route descended from Logan Pass at an even six percent grade for 10 miles, following "the contour of the mountainside . . . for the entire distance from Logan Pass to a point below Granite Park." There, a single switchback with a 100-foot radius brought the route to the elevation of the McDonald Creek portion of the road, which Kittredge suggested extending farther west along the stream valley. The sharpest curves of the route were on 100-foot radii for open curves and 200-foot radii for blind curves. Tangents (straight sections) of at least 40 feet intervened between curves. Kittredge felt that this route, unlike Goodwin's earlier survey, would "permit safe grades and curvature," would be "capable of future improvement," and would be kept free of snow for the longest possible season. Besides these respectably practical considerations, the engineer also allowed himself to add that the third alternative would "exhibit the grandeur of the park to the maximum." Realizing the additional expense involved in this recommended route, Kittredge offered several strategies for reducing costs, including estimates for alternative roadway widths between 22 and 28 feet. "Width of road," he noted, "is of less importance than grade or alignment." The roadway could always be widened; the basic location of the road, however, could not be changed later without abandoning all work done to that point.<sup>54</sup>

If Kittredge was trying to convince Mather, Albright, and the rest of the Park Service that Bureau of Public Roads engineers were worthy collaborators, he could not have succeeded more brilliantly. Superintendent Kraebel, who witnessed the heroic survey work in 1924, wrote Mather before the work was even finished, gushing that he found it difficult "to speak in anything but terms of superlative praise" for Kittredge's work. Kraebel feared that Mather would hesitate to support the more expensive alternative that Kittredge now championed. Pointing out the advantages of the Garden Wall route, the superintendent wanted to assure him that "the new location is emphatically worth the increased cost, whatever it may be." Kraebel wanted the entire road budget for Glacier spent on the Transmountain Highway alone, in order to bid it out as a single, three-year contract that spring.<sup>55</sup>

Thomas Vint reviewed Kittredge's February 1925 report with almost as much enthusiasm. "It is a pleasure to have at hand such a complete and comprehensive report," he wrote in his official memorandum to Daniel Hull. Vint was particularly taken with Kittredge's technique for visualizing the effect of road construction. The road engineer had pasted black and white photos into a panoramic mosaic, and then inked the alignments of the three alternative proposals directly on the photographs. Goodwin's switchbacks appeared in contorted graffiti of red ink disfiguring Logan Creek Valley; the Garden Wall route, drawn in blue on the same photos, etched a placid line curving gently across the steep slope above. It was precisely the picture that Vint had drawn verbally for Mather several months earlier. "From my knowledge of the ground," Vint concurred, the third alternative was "the one we should recommend to the service as the one to be built." The photographic technique for showing the impacts of proposed road locations on scenic panoramas became a standard procedure for park projects.

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<sup>54</sup>Frank A. Kittredge, "Trans-Mountain Highway, Glacier National Park, Report to National Park Service," February 5, 1925, p.1-3, 9-10, 22. Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>55</sup>Charles Kraebel to Stephen Mather, October 8, 1924. Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

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Vint appreciated the fact that the longer, straighter Garden Wall route gave "less views (especially close views) of the road itself . . . . One might say it performs its work more silently."<sup>56</sup> In his approbation of Kittredge's work, Vint completed his rebuttal of Goodwin's idea of "spectacularity" in road engineering. In Kittredge, Vint had found a worthy ally who could validate "landscape preservation" not only as good policy, but as good engineering. Vint's only criticism of Kittredge's 1924 survey involved relocating a short section of the road away from the shore of St. Mary Lake near the Going-to-the-Sun Chalets. Perhaps a small point, Vint wanted to preserve that corner of the lake from the direct presence of the road; he also knew that panoramic views of the entire lake would result from relocating the road to higher ground away from the shoreline. Kittredge, who understood Vint's concerns and goals for road construction, also was able to see the advantages of the relocation. The Bureau of Public Roads perhaps passed a test as well: recognizing the right of the Park Service landscape engineers to request the change, the roads bureau agreed to alter the alignment in the final location survey. A new partnership had begun.

That April, Vint, Kraebel, Kittredge, and two other engineers from the Bureau of Public Roads, Thomas Purcell and J.A. Elliott, met in Spokane to determine the particulars of how the Transmountain Highway contracts would be drawn up and supervised. In the process, they laid out the ground rules for how the Park Service and the Bureau of Public Roads would cooperate on park road projects for the next 25 years. The Transmountain Highway across Glacier continued to be the testing ground for the interbureau arrangement. From the west entrance of the park, the first 20 miles of the road had been completed up McDonald Creek past its confluence with Avalanche Creek. From that point, Kittredge had surveyed a route of about 12.5 miles along the Garden Wall to Logan Pass. Proceeding east from the pass, the route dropped down about 8.5 miles to the road along St. Mary Lake. While meeting in Spokane, however, Kraebel, Kittredge, Vint, and the others had decided that it would be wise to concentrate available funds on finishing the west side of the road up to Logan Pass--and to build it to the highest standards possible--before committing funds to projects on both sides of the park. In early May, the Spokane group went back to Glacier and inspected the 12.5-mile portion of the surveyed route (from McDonald Creek to Logan Pass) that they intended to put out to bid that month. With contract specifications drafted and other fine points addressed, advertisements were published on May 21 and bids were opened on June 10. The principal items of work included 480,000 cubic yards of general excavation, 16,000 cubic yards of tunnel excavation, 2,200 cubic yards of retaining wall and other masonry construction, 7,000 cubic yards of guardwall construction, and 14,500 cubic yards of surfacing. On May 20, the Bureau of Public Roads engineer W.G. Peters arrived at the park with four assistants to oversee the project, which according to Peters was the largest single contract so far let by the Bureau of Public Roads. The bid was awarded to a Tacoma contractor on June 11.<sup>57</sup>

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<sup>56</sup>Thomas C. Vint, "Memorandum to D.R. Hull...Re: Report by Highway Engineer Frank A. Kittredge," Glacier National Park, Central Files, Entry 6, RG 79, National Archives, Washington, DC.

<sup>57</sup>W.G. Peters, "Construction Progress Report (1925) on Transmountain Highway, Glacier National Park," 1925, Contracts and Proposals and Specifications, Entry 25, RG 79, National Archives, Washington, DC.

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The start of construction on the western approach to Logan Pass implied more than a new location survey for a single project; if all park roads were to be governed by the same policies and considerations, the \$7,500,000 appropriation won in 1924 would never go as far as expected. The Transmountain Highway, for example, had been estimated as a five-year project costing something over \$600,000; the contract let that June was for about \$900,000, and it only covered construction of only one portion of the road. If the Transmountain Highway were a precedent for future park road projects, new construction standards and policies would require vast new appropriations to complete the road system originally envisioned. But Mather and Assistant Director Horace M. Albright (both of whom were shrewd judges of the moods of Congress) sensed that, with an acceptable agreement established with the Bureau of Public Roads, greatly increased road appropriations would in fact be available.

The successful initiation of the Transmountain Highway project also implied numerous changes in the Park Service organizational structure. Chief engineer George Goodwin soon discovered that he had lost his place in the new order of things. Albright, Vint, and Kittredge all later recalled slightly different reasons for his dismissal, but clearly the proud engineer did not agree willingly to the abrogation of the authority he had exercised over park road construction since 1917. Since 1924 when Mather had begun making serious inquiries regarding a cooperative agreement with the Bureau of Public Roads, there had been a heated exchange of telegrams and letters between Goodwin and Mather regarding Goodwin's reluctance to acquiesce to such an arrangement. In 1925, Mather finally responded to an officious declaration from his chief engineer with a terse reply: "Resignation accepted." Goodwin's termination became effective the same day that the new road appropriations became available for expenditure: July 1, 1925.<sup>58</sup> Goodwin's former assistant became acting chief engineer, but the fate of the Portland engineering office had been sealed as well. That winter only three of the 11 engineers kept their jobs when the office was reorganized.<sup>59</sup>

That fall, Mather had convened the eighth national parks conference at Mesa Verde National Park. There could be no mistake regarding the main emphasis of the meeting: the director asked his superintendents and other conferees to assemble in "auto caravans" and converge on Mesa Verde from the other points of the Park-to-Park Highway. The superintendent of Yosemite, Washington B. ("Dusty") Lewis, led one caravan from California while Albright assembled another at Yellowstone. The goal was for superintendents to see "a number of parks that they would not have seen if they had come by train," and to "familiarize themselves with the country surrounding the parks . . . and with highway conditions in general."<sup>60</sup> The caravan of superintendents, who were accompanied by their families and members of the

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<sup>58</sup>Herbert Evison, Interview with Thomas Vint, 1960, p. 14. Transcript in Glacier National Park Archives; Albright and Cahn, Birth of the National Park Service, 194; Shankland, Steve Mather, 157; Steen, "Going-to-the-Sun Road," 24.

<sup>59</sup>Department of the Interior, National Park Service, 1926 Annual Report, 155.

<sup>60</sup>"Minutes of the Eighth National Park Conference Held in Mesa Verde National Park, Colorado, October 1, to 5, 1925, Inclusive." Typed Manuscript, p. 1-2. National Park Service History Collection, Harpers Ferry Center, Harpers Ferry, West Virginia.

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press, made news. The editor of the Stockton Record, who drove 3,000 miles with Lewis's group through California and the Southwest, pronounced the October conference "the most successful since the National Park Service was first inaugurated."<sup>61</sup> The guest of honor at the conference, L.I. Hewes of the Bureau of Public Roads, used the opportunity to further demonstrate the cooperative attitude that would be the necessary basis of a successful working arrangement with the Park Service. "We are learning something of your large vision," he assured the group, "brought about by our already permitted glimpses of how your people operate." He went on to confess that faced with a "rolling stock" of 20,000,000 American automobiles in 1925, his bureau had been too busy to "give much thought to the beautifying of highways." But, he added, "We have come into contact with your men Mr. Hull and Mr. Vint, and we have learned that we have been a little dilatory . . . . The boys of the bureau that are doing this work in the parks are more worried lest they offend the landscape engineers than that they offend me." The bureau's engineers, he confirmed, were "being versed in all the laws of landscape engineering."<sup>62</sup>

Despite his patronizing tone, Hewes acknowledged that the cooperation between Park Service landscape architects and Bureau of Roads civil engineers had already begun to produce significant results. By the fall of 1925, Bureau of Public Roads engineers had taken over some park road projects, were performing preliminary surveys for others, and were preparing to enter into a formal interbureau agreement that would give the roads bureau full responsibility for all future park road construction. Albright described the Mesa Verde conference, during which "the preliminary program of cooperation was mapped out," as the beginning of the "cooperative arrangement" between the two bureaus.<sup>63</sup> In 1925, the roads bureau assumed responsibility for the reconstruction of the Nisqually Road and began location surveys for the West Side and Yakima Park roads at Mount Rainier. At Zion Canyon, surveys were begun for the spectacular Zion-Mount Carmel Highway; at Sequoia the roads bureau began considering alternate routes for the continued construction of the Generals Highway, the first portion of which opened in 1926. The many successful developments initiated in 1925 led Mather to report "excellent progress on the road development program . . . under the cooperative arrangement" entered into with the Bureau of Public Roads.<sup>64</sup>

The Transmountain Highway in Glacier had set the precedent for how all of these projects and many others subsequently proceeded. The overall planning work of determining the location and character of park roads rested with the park superintendents, who consulted with the landscape engineers, Hull and Vint. The interbureau arrangement then allowed the Park Service to tap the expertise and organization of the Bureau of Public Roads for surveys,

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<sup>61</sup>G.F. Reynolds, "The Park Superintendents' Tour," Yosemite Nature Notes 4, no. 20 (November 1925), 105.

<sup>62</sup>"Minutes of the Eighth National Park Conference Held in Mesa Verde National Park," p. 23-25.

<sup>63</sup>"Minutes of the Ninth National Park Conference Held in Washington, DC, November, 1926." Typed Manuscript, p. 96. National Park Service History Collection, Harpers Ferry Center, Harpers Ferry, West Virginia.

<sup>64</sup>Department of the Interior, National Park Service, 1926 Annual Report, 15.

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contract specifications, and construction supervision--without giving up control over deciding where, when, and how park roads would be built. The landscape engineers retained the right to review and alter location surveys and contract specifications to assure that construction met their standards for landscape preservation as well as the Bureau of Public Roads standards for sound and economical engineering. In January 1926, these arrangements were formalized through a "memorandum of agreement" between the National Park Service and the Bureau of Public Roads.<sup>65</sup> The contract specified the precise terms of the working arrangement that had evolved over the previous year at Glacier and elsewhere.

As the construction of the western portion of the Transmountain Highway proceeded over the next three years, the experience continued to guide the evolution of the interbureau arrangement. Certain items of the construction contract had been written specifically to avoid excessive damage to roadside trees and slopes during construction. The blasting item, for example, required that a series of smaller charges be used rather than a large, single blast that could scar trees over a wide area. Another contract item required excavated material to be cast over the side of the road only in certain areas, where roadsides and trees were less likely to be damaged. Both clauses apparently were flouted during the construction of the west side approach to Logan Pass, despite the ineffectual objections of resident engineer W.G. Peters. Only in 1927, when Kittredge left the Bureau of Public Roads to become the chief engineer of the Park Service, were objections to these practices presented effectively to Chief MacDonald of the Bureau of Public Roads. Future construction supervision, Kittredge made clear, needed to enforce provisions intended to protect surrounding landscape features, even at the cost of convenience and economy.<sup>66</sup> Work on the contract proceeded mostly to everyone's satisfaction, however, and by the end of the construction season of 1928, the road had been completed to Logan Pass. J. Ross Eakin, who had returned as Glacier superintendent in 1927, reported that "the first section of highway through spectacular mountain scenery [would] be open to travel next season."<sup>67</sup> The road on the east side of the pass still remained to be completed.

Long before the first tourist drove the spectacular route along the Garden Wall to Logan Pass, however, the implications of the transmountain road project continued to affect the policies and organizational structure of the Park Service. The cost of the road had been greatly increased both by Mather's commitment to "preserve the landscape" at any cost and by the higher construction standards of the Bureau of Public Roads. Following the signing of the interbureau agreement in 1926, Mather noted that "the highest road standards covering grade and alignment have been adopted for [all] national park roads," following the example of the

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<sup>65</sup>"Memorandum of Agreement Between the National Park Service and the Bureau of Public Roads Relating to the Survey, Construction, and Improvement of Roads and Trails in the National Parks and National Monuments," January 18, 1926, Papers of Horace M. Albright, Entry 17 RG 79, National Archives, Washington, DC.

<sup>66</sup>Steen, "Going-to-the-Sun Road," 25-26.

<sup>67</sup>Department of the Interior, National Park Service, 1928 Annual Report, 176.

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Glacier road.<sup>68</sup> The appropriations authorized in 1924 obviously would no longer be sufficient; the Bureau of Public Roads engineers were in fact already gathering the preliminary data necessary to put forward new estimates for completing park road projects throughout the park system. In the fall of 1926, L.I. Hewes again addressed the national park conference, which was held in Washington, DC, that year. "There are going to be necessary about a thousand miles of road in the national parks," he announced, "as suggested by the superintendents and measured by the bureau." He had a "tentative figure," he added, for what it would cost.<sup>69</sup> This "second program" of road construction, finalized by the Park Service and the Bureau of Public Roads in 1926-27, estimated that \$51,000,000 would be necessary to build and modernize park roads throughout the system. In 1927 Congress approved the new budget, beginning with \$5,000,000 for the 1928 construction season, an amount which effectively doubled the annual rate of road appropriations beginning that year.<sup>70</sup> Now fully integrated into the general road building efforts overseen by the Bureau of Public Roads, national park road budgets began to claim their fair share of federal aid.

Park Service policy regarding road planning and construction matured rapidly as budgets grew in the mid-1920s. The road construction program had been launched successfully; now Park Service officials needed to confirm the desired limits of development. As the funding (and quality) of individual road projects went up, Mather and Albright refined their policy for new road construction: each park really needed little more than one great road that made some portion of the park's main scenic attractions accessible to all. Such a road should exhibit the highest standards of construction and would reveal superlative scenery. The Transmountain Highway, which was christened "Going-to-the-Sun Highway" when finally dedicated in 1933 (it later was changed to "Going-to-the-Sun Road"), epitomized this ideal. The increased cost of the Glacier road had siphoned funds and attention away from other road projects in the park, and as a result the transmountain road had become the perfect example of an exceptional and expensive--and solitary--road for a given park. Although other roads had been planned for Glacier (and portions of them built) the extraordinary quality of Going-to-the-Sun Road reinforced the conclusion that no other major through roads were needed in the park. Earlier models for national park development had featured more extensive park drive systems, on the model of Yellowstone's Grand Loop. In the model suggested by Going-to-the-Sun Road at Glacier, however, one great automotive road would be enough; the rest of the park would remain accessible by trail or remain completely "undeveloped."

This important policy shift occurred over a period of years and carried with it an implied need to develop a far more sophisticated process for planning the type and extent of all development in each park. Albright already recognized this at the 1925 Mesa Verde conference. In preparation for the road construction program that would result from the planned interbureau agreement, he and Arno Cammerer suggested to the assembled superintendents that they adopt a planning "program" to help organize and prioritize their many park road proposals. Albright

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<sup>68</sup>Department of the Interior, National Park Service. 1926 Annual Report, 15.

<sup>69</sup>"Minutes of the Ninth National Park Conference Held in Washington," 97.

<sup>70</sup>Department of the Interior, National Park Service. 1927 Annual Report, 133.

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asked each superintendent to produce a park map showing "the areas not to be developed at all," and suggestions for road projects in those areas that were to be developed. Also at the Mesa Verde conference, Cammerer suggested that Daniel Hull's recently completed town plan for Grand Canyon Village (1924) could become the model for expanded "general development plans" that would include not only detailed plans for villages, but also general plans for roads, trails, utilities and other park development.<sup>71</sup> The prospect of an unprecedented amount of park development to be realized through the interbureau agreement with the Bureau of Public Roads forced Park Service administrators to begin implementing new procedures for planning. Policies that until then had been expressed mostly in terms of general goals would have to be refined. The example of Going-to-the-Sun Road suggested that a single road, if it were exceptional enough, could meet a park's total need for highway development, an idea of great significance for what would soon be known as park "master planning."

The experience of planning and building the first portions of Going-to-the-Sun Road had also forced Park Service officials to reconsider--and then reorganize--the engineering and planning functions of the bureau. In 1927 Frank Kittredge filled the chief engineer vacancy at the Park Service; but the Bureau of Public Roads had permanently assumed the responsibility for providing the surveys, specification, and construction supervision for park road construction. The role of Kittredge and other Park Service personnel therefore stressed planning and review, as well as cooperation with the engineers from the roads bureau. This situation, in turn, demanded a reassessment of the Park Service landscape engineering division. As matters stood, it was hard to imagine that Hull and Vint would be able to effectively plan and review \$51,000,000 of park road construction. Observing the situation in 1926, L.I. Hewes commented, "I think it is manifest that the landscape personnel, two men, are going to be driven distracted if they try to cover one third of the United States in a few months."<sup>72</sup>

In both civil engineering and landscape architecture, the design and construction of the transmountain route in Glacier--Going-to-the-Sun Road--had first indicated the need for reassessing the professional capacities of the Park Service. Up until 1924, vague commitments to avoid "gridironing" the parks with roads and to "harmonize" construction work with park scenery had not been seriously tested. Hull and his assistants had provided excellent town plans and architectural designs that met the immediate needs of park managers and visitors; but limited appropriations precluded more ambitious development plans that encompassed entire parks. The Glacier road, however, and the \$51,000,000 "second program" of road construction that followed it, demanded that town planning be expanded into regional planning. At a more detailed level of landscape design, the decision of how to locate the final route up to Logan Pass demanded that Park Service landscape architects involve themselves directly in fundamental civil engineering decisions. It was the Glacier road project that first indicated that the Park Service would need to produce "landscape engineers" in fact as well as in name.

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<sup>71</sup>"Minutes of the Eighth National Park Conference Held in Mesa Verde National Park," p. 29, 107.

<sup>72</sup>"Minutes of the Ninth National Park Conference Held in Washington," 98.

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More than any park road project, Going-to-the-Sun Road embodied Stephen Mather's evolving hopes and policies for developing the national parks as a coordinated system. The transmountain road allowed Glacier to be developed and administered as a 20th-century landscape park: accessible to the growing legions of automotive tourists and thereby preserved from other forms of development. Louis Hill's role in the management of Glacier (and his essentially 19th-century vision of national park administration) steadily waned as the number of visitors to the park quickly grew. Crucial not only to the future development of Glacier, Going-to-the-Sun Road erased the single greatest deficiency in Mather's Park-to-Park Highway route, completing that early ideal of an "interstate highway system" that would bear a steady stream of "tourist gold" into Western communities. Mather, however, suffered a stroke in November 1928; Albright, his long-anticipated successor, was sworn in as the second director of the National Park Service in January. That summer, Going-to-the-Sun Road opened to tourists between West Glacier and Logan Pass; but Mather remained in very serious condition. A second stroke killed him in January 1930, at the age of 63.

Construction on the east portion of Going-to-the-Sun Road continued for the next three years. During that time, many other high profile road projects were undertaken under the terms of the 1926 memorandum of agreement between the Park Service and the Bureau of Public Roads. Among them are some of the most scenic roads in the country, and the finest examples of that blend of disciplines called "landscape engineering." The Generals Highway, in Sequoia, opened between Ash Mountain headquarters area (laid out by Hull) and the Giant Forest in 1926. The extension of the road to General Grant National Park was completed in 1935, but only after another prolonged controversy over route location. Once again convenience was pitted against scenic preservation in road development plans; in this case Superintendent John R. White assured that the Generals Highway became not only one of the most scenic roads in the country, but also that the road development plan for the park as a whole minimized intrusions on wilderness areas.<sup>73</sup> Construction began on the new Trail Ridge Road in Rocky Mountain National Park in the fall of 1929. Another transmountain route over the Continental Divide, the Trail Ridge Road replaced an earlier state road that was full of switchbacks and tight curves. As Kittredge had predicted might happen in such cases, the old road had to be completely abandoned. The new Trail Ridge Road, completed in 1933, ran for 10 miles at above 11,000 feet and remains easily one of the most spectacular scenic routes in the country.<sup>74</sup> At Zion Canyon, the Zion-Mount Carmel Highway opened in 1930. Located along an impossible route from the valley floor to Mt. Carmel Junction, the road employed switchbacks, extensive benching, and a tunnel over one mile long through solid sandstone. One of the greatest achievements of the Bureau of Public Roads, it is the most intensively engineered of all the national park roads.<sup>75</sup>

One of the most remarkable of all the "second program" road projects built after 1926 was the new Wawona Road at Yosemite, built by the Bureau of Public Roads to replace the wagon

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<sup>73</sup>Dilsaver and Tweed, Challenge of the Big Trees, 126-133.

<sup>74</sup>Buchholtz, Rocky Mountain National Park, 174-178.

<sup>75</sup>Donald T. Garate, The Zion Tunnel: From Slickrock to Switchback (Springdale, Utah: Zion Natural History Association, 1989.)

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road that had served as the southern entrance to the valley since the 1870s. The new road, which was begun in 1930, had been a subject of concern for the Yosemite National Park Board of Expert Advisors, an advisory board of the type first suggested by Frederick Law Olmsted, Jr., in 1911. Olmsted, in fact, was named the first chairman of the Yosemite board when it was formed in 1928. In that position he had been able to continue his father's work and exert timely and thoughtful influence, not only on the Wawona Road project, but on a range of important issues at Yosemite. The location of the new Wawona Road required a steep grade in order to drop into the valley near Inspiration Point, a location that featured one of the most famous views of Yosemite Valley. The road plans eventually called for a tunnel at that point, bored four-fifths of a mile through solid granite under Turtleback Dome. Olmsted advised taking the huge amount of loose rock blasted out for the tunnel and using it to create a "hand-laid rock embankment" to serve as a viewing terrace at the eastern portal of the tunnel. This would prevent the enormous amount of rubble from permanently scarring the slopes below; it would also create an overlook providing motorists with a breathtaking vista of the valley immediately as they exited the tunnel.<sup>76</sup>

Such a spatial sequence--from the constricted space of a tunnel to a suddenly awesome vista--was a landscape effect familiar to the younger Olmsted. His father had used a similar strategy at the entrance to the Long Meadow of Prospect Park and at Franklin Park as well. When opened in 1933, the Wawona Tunnel and its overlook proved to be another strong collaboration of the Park Service and the Bureau of Public Roads, preserving scenery through technically advanced road construction. It also illustrated the continued influence of established landscape park theory and design in the development of 20th-century landscape parks--a continuity that the younger Olmsted had done so much to assure over the previous 20 years.

All of these national park roads are of great significance and have retained extraordinary physical integrity. This is due in part to their privileged locations: while many scenic roads outside parks were widened, straightened, and turned into mere interstate arteries after World War II, these national park roads remain excellent examples of some of the finest highway engineering of the period. None of these examples, however, played the pivotal role in the history of national park development that Going-to-the-Sun Road did.

But in 1929, the Glacier road project had been briefly delayed by the complex local politics that initially had encouraged its development. The proposal for a Marias Pass road, never forgotten, was boosted as part of the "Roosevelt Highway" and funded through federal aid in 1926. Completed in 1930, it provided the first automotive link between East Glacier and West Glacier, and so reduced the urgency of completing Going-to-the-Sun Road. There were other reasons, however, for the Park Service to delay the completion of its Logan Pass transmountain route. A new priority for Director Albright was the elimination of "inholdings," or private property within park boundaries. The completion of Going-to-the-Sun Road, he feared, would greatly increase the value of the private land within Glacier that he

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<sup>76</sup>Quoted in McClelland, Presenting Nature, 133-134. See also: Runte, Yosemite, 154-159.

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hoped to acquire for the park. Construction soon resumed, however, when it became apparent that property values were rising anyway.<sup>77</sup>

In 1930, the next resident Bureau of Public Roads engineer, A.V. Emery, completed a new location survey for the remaining section of the transmountain route on the east side of Logan Pass. Grading and construction began on the east side in 1931, and continued through the next season. The new road, finally connecting Logan Pass to the St. Mary spur road near the Going-to-the-Sun Chalets, was completed ahead of schedule in October 1932.<sup>78</sup> Early in the summer of 1933, Superintendent Eivind T. Scoyen (who had replaced Eakin in 1931) prepared for a major celebration. On July 15, more than 4,000 people assembled at Logan Pass, including the governor of Montana, Senator Wheeler, and 200 Blackfeet, Kootenai, and Salish Indians "in full tribal regalia," according to the press release.<sup>79</sup>

During the ceremony, a bronze plaque was dedicated to Mather at the summit of Logan Pass. A number of identical memorials had been commissioned by a group of the former director's friends and dedicated the year before in prominent locations in most of the parks. The Glacier plaque had been reserved for this moment, when the great transmountain road across Glacier National Park finally completed the vast scenic loop of the Park-to-Park Highway. It had been eight years since Kittredge re-surveyed the western approach to Logan Pass, and eleven since the first Congressional appropriations for road construction. The transmountain road that Albright and Goodwin had estimated at about \$600,000 had cost over \$2,500,000. But it was, according to a proud Superintendent Scoyen, "the most beautiful piece of mountain road in the world." And the policy the road had helped inspire was clear in the letter from Director Albright that Scoyen read at the 1933 dedication: "The major portion of Glacier Park will always be accessible only by trail . . . . Let there be no competition of other roads with the Going-to-the-Sun Highway. It should stand supreme and alone."<sup>80</sup>

Among the crowd that July afternoon were hundreds of CCC recruits who had just arrived that summer and were busily setting up no less than eight of their camps in the park. Their presence was a reminder that Going-to-the Sun Road had not really been completed. Even while construction had continued on the Logan Pass portions of the road, plans had been underway for major reconstruction projects. A series of new bridges, wider travel lanes, and improved surfacing were already envisioned, especially for the Lake McDonald and St. Mary Lake sections of the road that had been built before the Bureau of Public Roads had introduced its standards for width, curvature, and culvert design. After 1933 Franklin Roosevelt's New

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<sup>77</sup>Steen, "Going-to-the-Sun Road," 27-30.

<sup>78</sup>A.V. Emery, "Final Report of the Location Survey of the Transmountain Highway, East Side (1929-30)," Road Survey Reports, 1920-1926, Entry 26, RG 79, National Archives, Washington, DC; A.V. Emery, "Final Construction Report (1931-32), Transmountain Highway, East Side," Glacier National Park Archives.

<sup>79</sup>"Going-to-the-Sun Highway Dedication, Glacier National Park, July 15, 1933." program brochure; E.T. Scoyen, "Press Release," re: Glacier ceremonies, Glacier National Park Archives.

<sup>80</sup>Horace M. Albright, "Memorandum for the Secretary," re: Glacier ceremonies, July 17, 1933, Glacier National Park, General File, RG 48, National Archives, Washington, DC.

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Deal, which the crowds of CCC boys cheerfully represented, would subsequently be the source of another \$1,000,000 for the reconstruction of the Glacier road. By 1937, the entire road had been improved to Bureau of Public Roads standards and contracts were being prepared to cover the crushed stone base courses with asphalt pavement. The final section of pavement was finally poured in 1952.<sup>81</sup>

Today, Going-to-the-Sun Road Historic District encompasses 48.7 miles of the road, from the foot of Lake McDonald to the Divide Creek on the eastern park boundary (the West Glacier to Apgar portion of the road has been altered and is not in the district). The historic district contains the original road, eight major bridges, two tunnels, arches, culverts, retaining walls, and 40,000 feet of guardwalls, all built between 1922 and 1937. The West Side Tunnel (1928) was cut through 192 feet of rock; the East Side Tunnel (1933) is 395 feet long. The original alignment of the road, running along the Garden Wall on the west side and above St. Mary Lake on east side, remains true to the locations that Thomas Vint suggested, and which Frank Kittredge, W.G. Peters, and A.V. Emery finalized. The original 22-foot width of the roadway has been maintained, except on the 10-mile traverse of the Garden Wall, which in places has always been narrower. In 1983 this historic district was placed on the National Register of Historic Places; in 1985 it was made a National Historic Civil Engineering Landmark.<sup>82</sup>

Since World War II, Glacier National Park, like the rest of the park system, has been visited by ever greater numbers of motorists. The pressure to widen and modernize national park roads in some cases has been irresistible. Road modernizations, while certainly necessary in some cases, have permanently altered the initial (and for many people the only) experience of many park landscapes: the view from the road. Higher design speeds and greater traffic capacities alter the experience of driving through a national park, and that alteration implies a loss of integrity of the historic park design. Road widenings and other postwar reconstructions were done primarily to serve larger numbers of tourists, and in many cases to accommodate recreational vehicles with physical dimensions and turning radii unheard of for non-commercial vehicles before the war. This policy may have been called for during the postwar period and beyond, but today many park managers argue against endlessly increasing the capacity of parks to serve larger numbers--and longer vehicles--than ever before.

This shift in policy hopefully has assured that the remarkable integrity of Going-to-the-Sun Road will be maintained. The road is of an age that demands maintenance and, for certain features, reconstruction if it is to continue to serve its historic role as the unique vehicular crossing of Glacier National Park. Fortunately the reconstruction of historic guardwalls and the resurfacing and stabilization of other parts of the historic road promise to be completed in coming years without altering the historic road alignment, and even without raising the historic guardwall height. If this is achieved, the restoration of Going-to-the-Sun Road should be

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<sup>81</sup>Steen, "Going-to-the-Sun Road," 31-36.

<sup>82</sup>Christie Amos and Alan S. Newell, National Register of Historic Places Nomination for the Going-to-the-Sun Road Historic District, typed manuscript (1983). National Register nominations are available at the National Register of Historic Places, National Park Service, 800 North Capitol Street, Washington, DC; Panos Kokkas, National Historic Civil Engineering Landmark Form for Going-to-the-Sun Road, typed manuscript (1985), Glacier National Park Archives.

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among the finest historic landscape restorations of its type. Considering the number of extraordinary (and aging) scenic roads of this period in the national park system, the ongoing restoration and reconstruction of Going-to-the-Sun Road may continue to define Park Service policy and standards for road construction and management today, just as the transmountain project determined road planning policies and influenced Park Service organizational structures during its original construction.

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Previous documentation on file (NPS):

- Preliminary Determination of Individual Listing (36 CFR 67) has been requested.  
 Previously Listed in the National Register.  
 Previously Determined Eligible by the National Register.  
 Designated a National Historic Landmark.  
 Recorded by Historic American Buildings Survey: # \_\_\_\_\_  
 Recorded by Historic American Engineering Record: # MT-67

Primary Location of Additional Data:

- State Historic Preservation Office  
 Other State Agency  
 Federal Agency  
 Local Government  
 University  
 Other (Specify Repository): \_\_\_\_\_

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**10. GEOGRAPHICAL DATA**

Acreage of Property: 354.18 approx.

## UTM References:

	Zone	Easting	Northing		Zone	Easting	Northing
<b>A</b>	12	321800	5401300	<b>B</b>	12	321000	5402000
<b>C</b>	12	315000	5395000	<b>D</b>	12	312800	5395000
<b>E</b>	12	310800	5393900	<b>F</b>	12	306300	5393650
<b>G</b>	12	304700	5396350	<b>H</b>	12	301000	5395900
<b>I</b>	12	300600	5399350	<b>J</b>	12	298900	5400900
<b>K</b>	12	297850	5402600	<b>L</b>	12	294950	5399150
<b>M</b>	12	294550	5394950	<b>N</b>	12	293400	5394350
<b>O</b>	12	291200	5390150	<b>P</b>	12	287800	5390000
<b>Q</b>	12	287800	5388500	<b>R</b>	12	283000	5381350
<b>S</b>	12	273100	5378450	<b>T</b>	12	271650	5376800

## Verbal Boundary Description:

The National Historic Landmark District boundary follows Going-to-the-Sun Road and typically extends 30 feet from the center line of the road in either direction to form a corridor. The district begins 30 feet east of the T-junction on the west side of Glacier National Park (at the southern edge of Lake McDonald) and continues to the eastern Park Boundary. The district therefore forms a corridor 60-foot wide (typically) and 48.7 miles long.

The district widens if necessary to encompass overlooks or any other area in which masonry construction or pavement extends beyond the 60-foot corridor. In these areas the boundary of the district extends 10 feet from all paved areas or masonry construction. At Going-to-the-Sun Point, the boundary of the district follows the road to the pull out area (30 feet from the centerline in either direction) and extends 10 feet from all paved areas to encompass the entire area and its retaining walls.

## Boundary Justification:

The boundary follows the historic road and includes all structures directly associated with it.

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**II. FORM PREPARED BY**

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Date: September 5, 1996

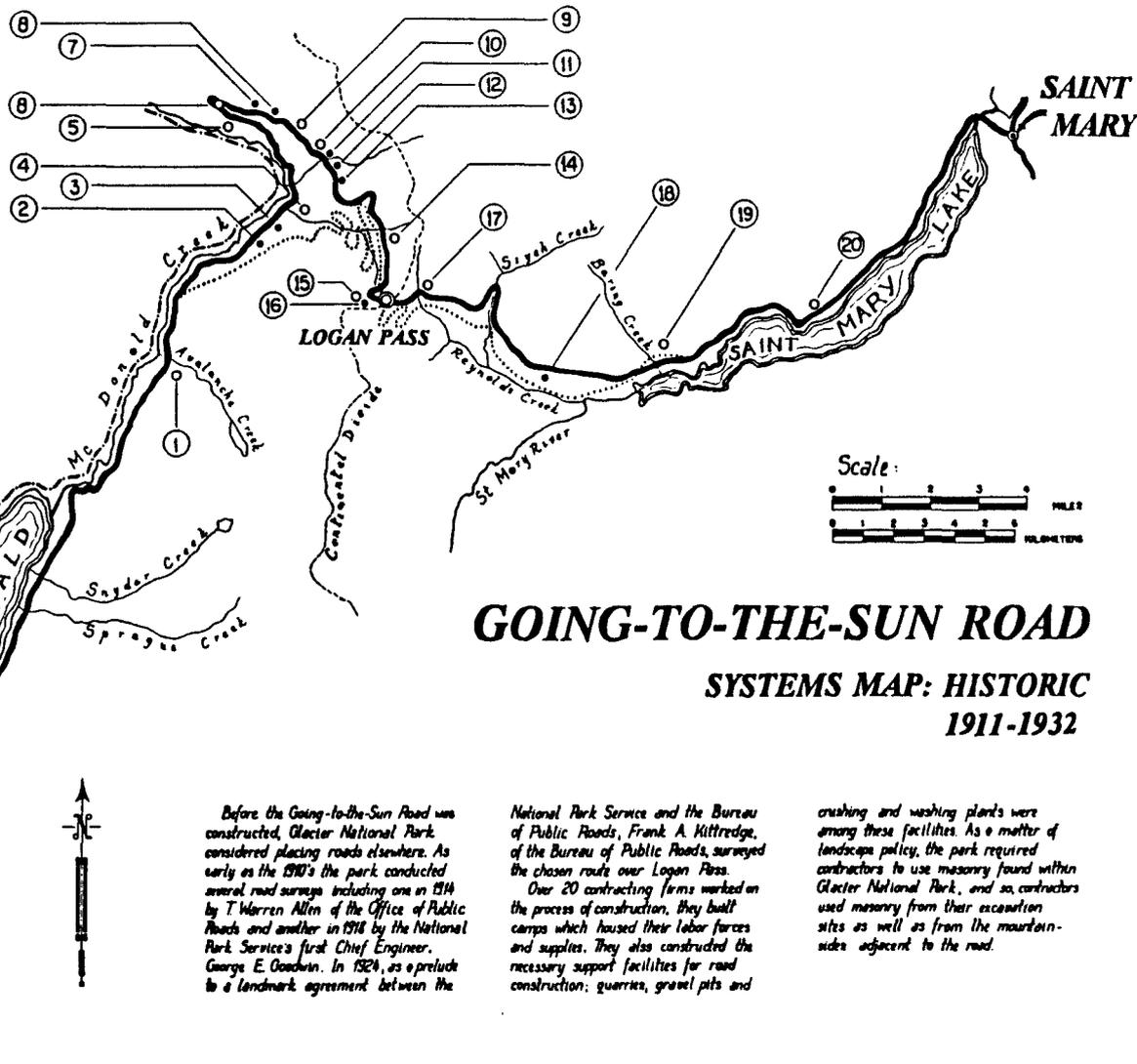
**NATIONAL HISTORIC LANDMARKS SURVEY**

December 30, 1996

KEY:

- 1 Avalanche Creek Camp
- 2 Crushing plant 1926-27
- 3 Crushing, washing and filtering operations 1926-27
- 4 Camp #1 Logan Creek
- 5 Camp #7 West Side Tunnel
- 6 Camp #2 The Loop
- 7 Quarry site
- 8 Quarry site
- 9 Camp #3
- 10 Camp #4 Haystack Creek
- 11 Quarry site 1934-35
- 12 Quarry site 1934-35
- 13 Crushing plant 1928
- 14 Camp #5 Triple Arches
- 15 Camp #6 Logan Pass
- 16 Quarry site
- 17 Lunch Creek Camp
- 18 Crusher plant
- 19 Bering Creek Camp
- 20 Rising Sun Camp

- Proposed route to Waterton Lake 1910
- ..... Goodwin proposed route 1918
- Kittredge survey 1924
- Original road alignment Belton to Apper



# GOING-TO-THE-SUN ROAD

## SYSTEMS MAP: HISTORIC

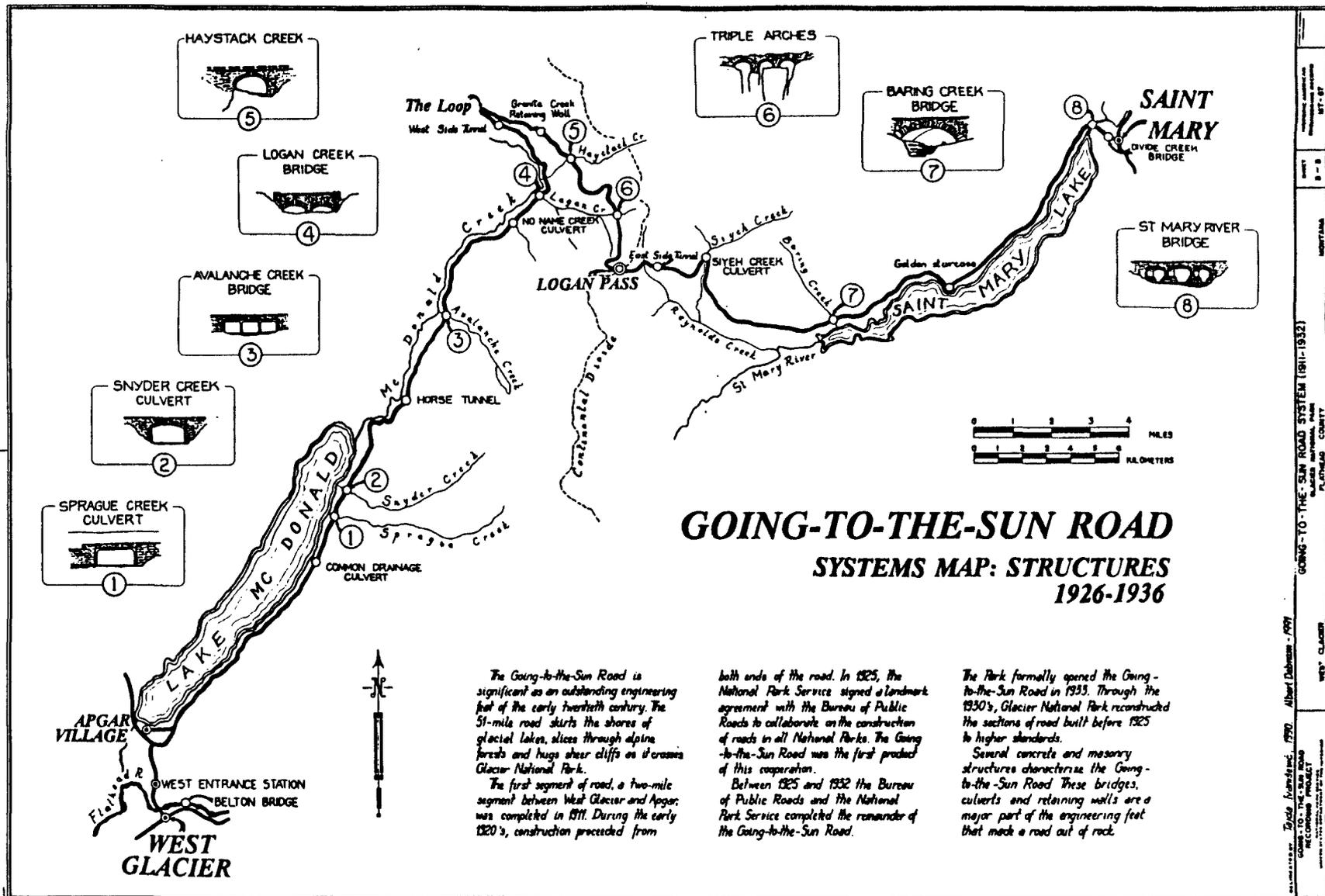
### 1911-1932

Before the Going-to-the-Sun Road was constructed, Glacier National Park considered placing roads elsewhere. As early as the 1910's the park conducted several road surveys including one in 1914 by T. Warren Allen of the Office of Public Roads and another in 1918 by the National Park Service's first Chief Engineer, George E. Goodwin. In 1924, as a prelude to a landmark agreement between the

National Park Service and the Bureau of Public Roads, Frank A. Kittredge, of the Bureau of Public Roads, surveyed the chosen route over Logan Pass.

Over 20 contracting firms worked on the process of construction, they built camps which housed their labor forces and supplies. They also constructed the necessary support facilities for road construction: quarries, gravel pits and

crushing and washing plants were among these facilities. As a matter of landscape policy, the park required contractors to use masonry found within Glacier National Park, and so, contractors used masonry from their excavation sites as well as from the mountain-sides adjacent to the road.



# GOING-TO-THE-SUN ROAD

## SYSTEMS MAP: STRUCTURES 1926-1936

The Going-to-the-Sun Road is significant as an outstanding engineering feat of the early twentieth century. The 51-mile road skirts the shores of glacial lakes, slices through alpine forests and hugs sheer cliffs as it crosses Glacier National Park.

The first segment of road, a two-mile segment between West Glacier and Apgar, was completed in 1911. During the early 1920's, construction proceeded from

both ends of the road. In 1925, the National Park Service signed a landmark agreement with the Bureau of Public Roads to collaborate on the construction of roads in all National Parks. The Going-to-the-Sun Road was the first product of this cooperation.

Between 1925 and 1932 the Bureau of Public Roads and the National Park Service completed the remainder of the Going-to-the-Sun Road.

The Park formally opened the Going-to-the-Sun Road in 1933. Through the 1930's, Glacier National Park reconstructed the sections of road built before 1925 to higher standards.

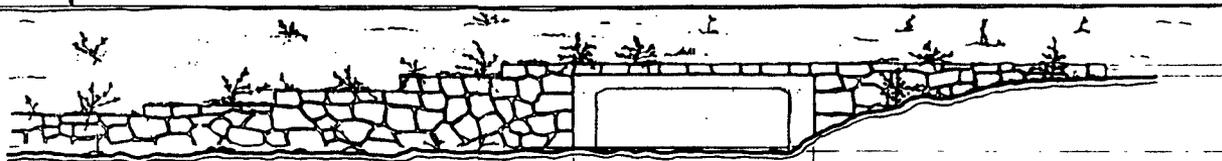
Several concrete and masonry structures characterize the Going-to-the-Sun Road. These bridges, culverts and retaining walls are a major part of the engineering feat that made a road out of rock.

Scale 1:50,000  
 Guide to the Going-to-the-Sun Road  
 THE GOING-TO-THE-SUN ROAD SYSTEM (1911-1932)  
 WEST GLACIER  
 CLAYTON COUNTY  
 MONTANA  
 SHEET B-8  
 1977-87





ROAD SURFACE



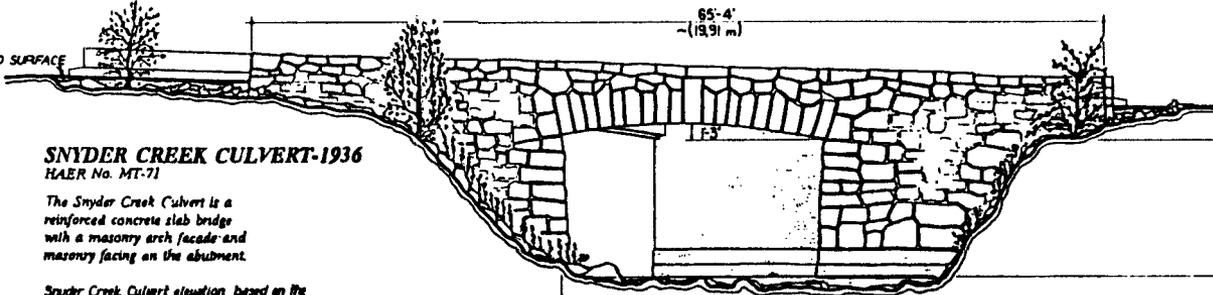
18'-4"  
-(5.59 m)

5'-9"  
-(1.75 m)

**SPRAGUE CREEK CULVERT**  
1930-1931 HAER No. MT-70

The Sprague Creek Culvert is a reinforced concrete slab culvert with masonry guardrails and wing walls.

ROAD SURFACE



65'-4"  
-(19.91 m)

10'-3"  
-(3.12 m)

**SNYDER CREEK CULVERT-1936**  
HAER No. MT-71

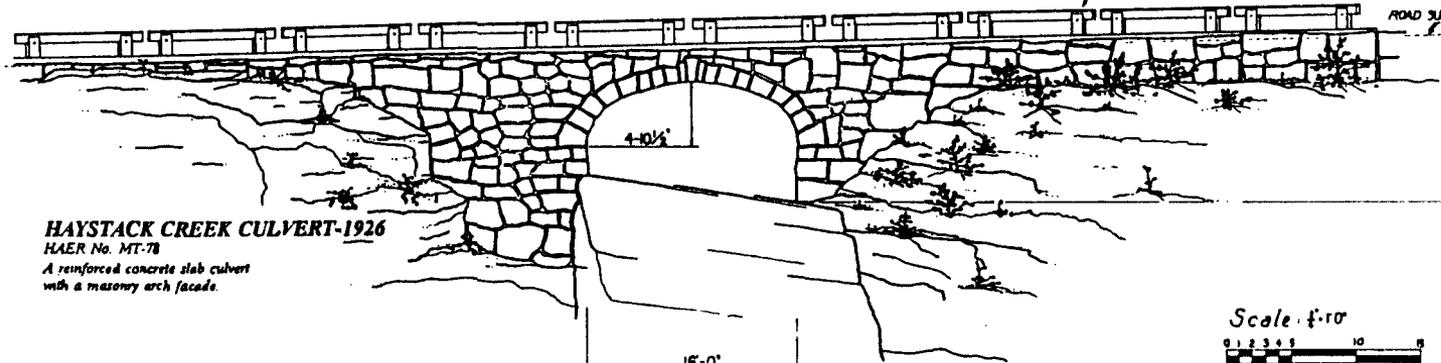
The Snyder Creek Culvert is a reinforced concrete slab bridge with a masonry arch facade and masonry facing on the abutment.

Snyder Creek Culvert elevation based on the National Park Service Branch of Plans and Design drawing P.G. 537-A.

20'-0"  
-(6.10 m)

Removable wood guardrail (ca. 1970's)

ROAD SURFACE



4'-10 1/2"

9'-2"  
-(2.79 m)

**HAYSTACK CREEK CULVERT-1926**  
HAER No. MT-78

A reinforced concrete slab culvert with a masonry arch facade.

16'-0"  
-(4.88 m)

Scale 4:10



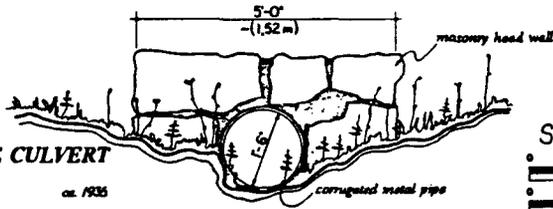
FEET  
METERS

Illustration by Jesse Glass - Withers and Clyde Ingersoll, 1999 Albert Delbridge, 1991  
GOING TO THE SUN ROAD RECORDING PROJECT  
WEST BLAZER PLASTER NATIONAL PARK

GOING TO THE SUN ROAD SYSTEM CULVERTS (1926-1936)  
PLASTER NATIONAL PARK

WEST BLAZER  
MT-78

ROAD SURFACE



**COMMON DRAINAGE CULVERT**

Corrugated metal pipes vary  
HAER No. MT-69

ca. 1935

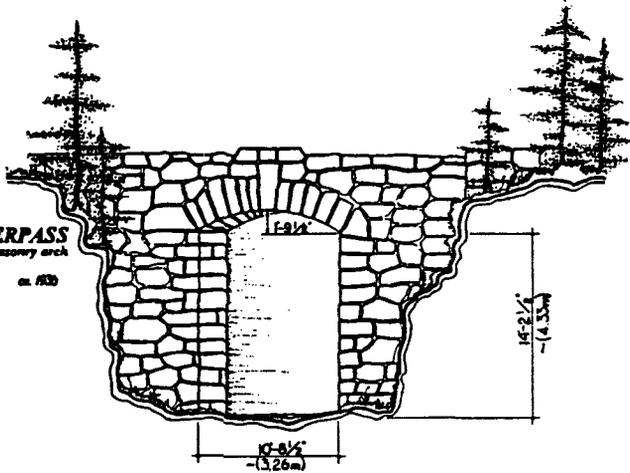
Scale: 1"-1'



**HORSE TRAIL UNDERPASS**

A reinforced concrete slab with masonry arch  
facades at either end.  
HAER No. MT-72

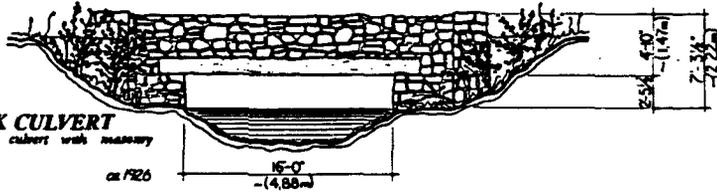
ca. 1920



**(NO NAME) CREEK CULVERT**

A reinforced concrete slab culvert with masonry  
guardrail.  
HAER No. MT-74

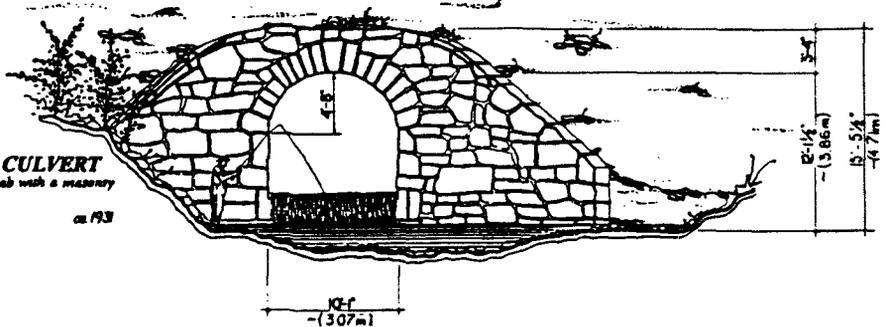
ca. 1926



**SIYEH CREEK CULVERT**

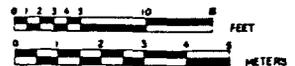
A reinforced concrete slab with a masonry  
arch facade.  
HAER No. MT-81

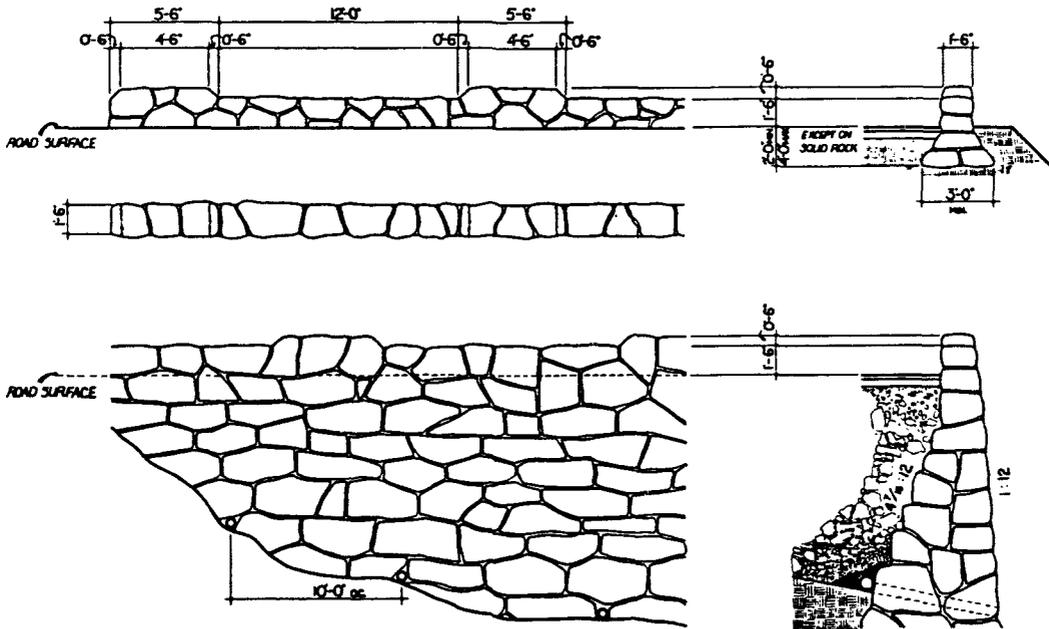
ca. 1933



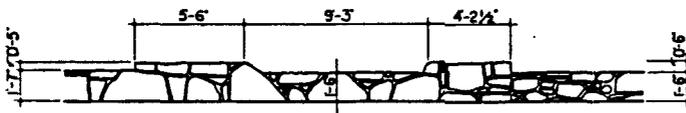
**ELEVATIONS**

Scale: 1/2"-1'

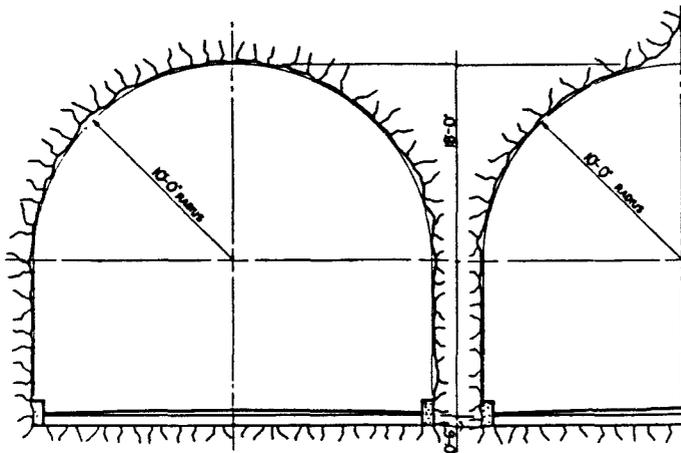




RETAINING WALL AND GUARD WALL CONSTRUCTION GUIDELINES - 1928 AND 1935

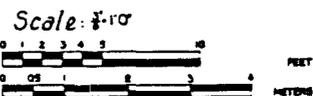


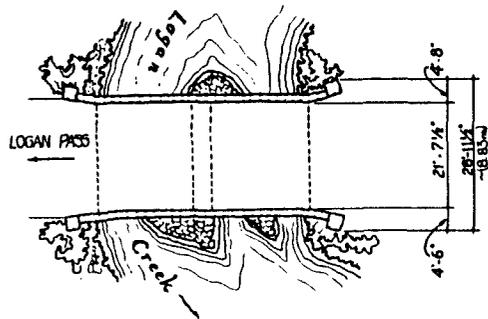
EXISTING GRANITE CREEK GUARD WALL - 1926



TUNNEL AND HALF TUNNEL CONSTRUCTION GUIDELINES - 1925

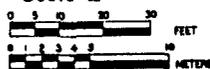
Typical guard wall details based on U.S. Dept. of Commerce Bureau of Public Roads, Division No. 8 drawings no. 7-231 and 2-153. Tunnel and Half Tunnel sections based on Glacier National Park drawing no. 3332 sheet 2 of 30 and no. 3330 sheet 2 of 2.





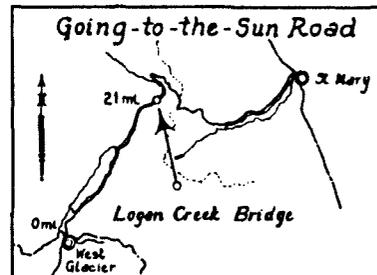
PLAN

Scale: 1"=10'



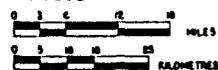
The Logan Creek Bridge is a two-span, 53 foot concrete slab bridge with a masonry arch facade on the Going-to-the-Sun Road in Glacier National Park. In 1925, the National Park Service and the Bureau of Public Roads reached a landmark agreement to cooperate in the construction of roads in all National Parks. During the summer of 1925, Williams and Douglas, a construction firm from Tacoma, Washington, won the first contract resulting from the agreement. Between 1925 to 1926, Williams and Douglas built 12 miles of the Going-to-the-Sun Road on the western side of the park.

Logan Creek Bridge is one of the oldest bridges on the road. Williams and Douglas originally built the bridge in 1926 with only one arch. During the fall of 1926, however, Logan Creek flooded and convinced the National Parks Service and the Bureau of Public Roads to add another arch on the western end the following summer.

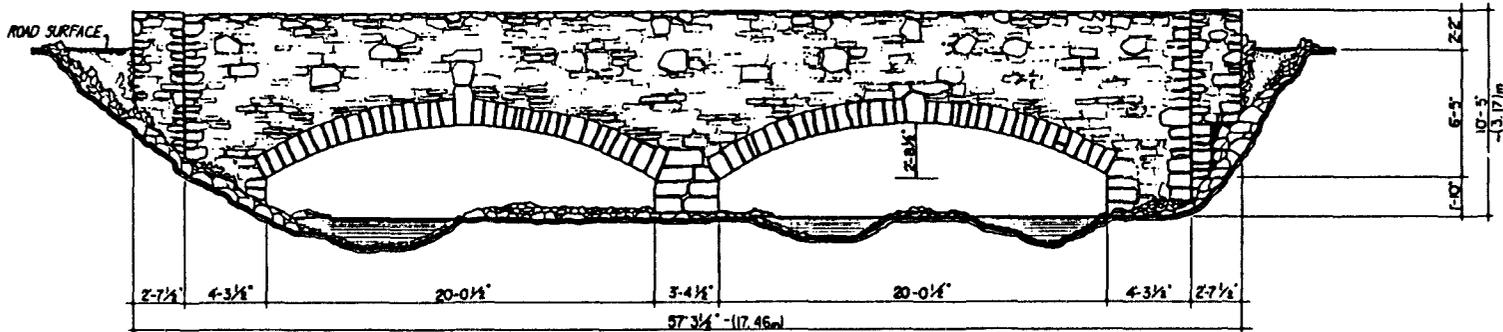


LOCATION MAP

Scale: 1"=6 MILES



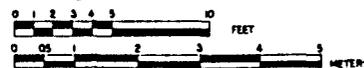
UTM: 12/340003/83672  
Quad: Mount Cannon



DOWNSTREAM ELEVATION

**LOGAN CREEK BRIDGE-1926**

Scale: 1"=10'



Dyde Anderson, 1979; Albert Dubois, 1997

GOING-TO-THE-SUN ROAD; LOGAN CREEK BRIDGE (1926)  
1 1/2 MILES EAST OF WEST GLACIER, MONTANA  
WEST GLACIER

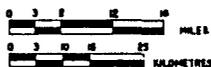
NATIONAL PARK SERVICE, GLACIER NATIONAL PARK, WEST GLACIER, MONTANA  
PROJECT NUMBER: 107-178  
SCALE: 1"=1'



LOCATION MAP



Scale: 1" = 6 MILES

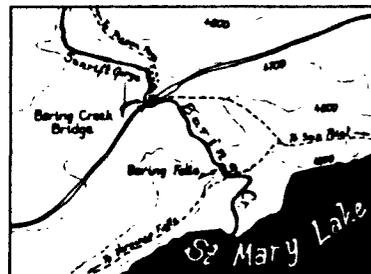


UTM: 12/339470/30859  
Quad: Rising Sun

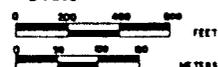
Baring Creek Bridge is a 12-foot reinforced concrete arch with a stone masonry facade. A.R. Guthrie and Co. of Portland, Oregon, built the bridge in 1931 as a part of a 4.5-mile contract on one of the final links of the Going-to-the-Sun Road.

The Landscape Architecture Division of the National Park Service influenced the design and specifications of all structures on the Going-to-the-Sun Road in an attempt to make the structures unobtrusive to the natural setting. According to the Landscape Architect's recommendations, Baring Creek Bridge was designed unusually high and long to minimize the destruction of the natural landscape and to allow the existing hiking trail from Sunrise Gorge to Baring Creek Falls to pass underneath the bridge.

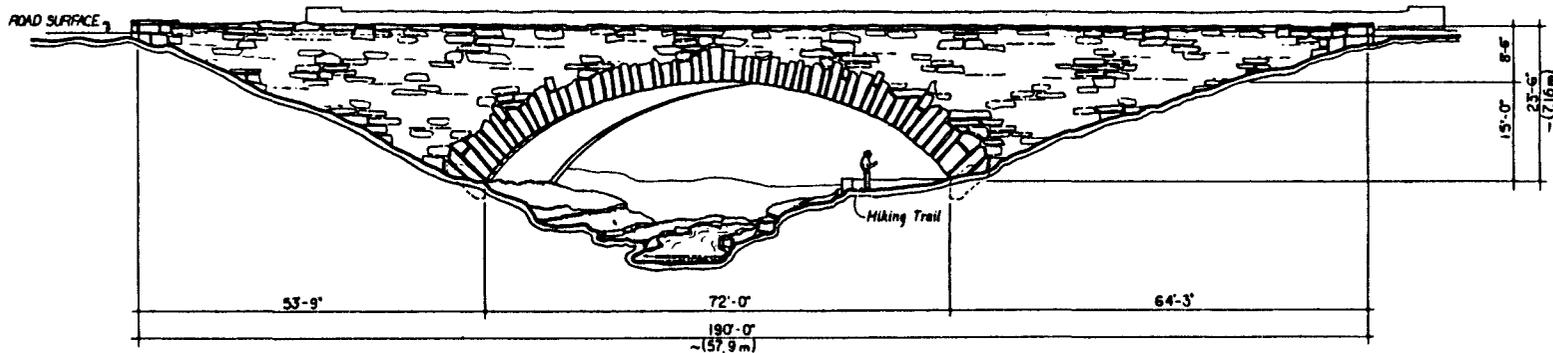
AREA MAP



Scale: 1" = 200'

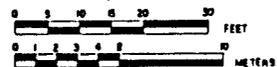


# BARING CREEK BRIDGE - 1931



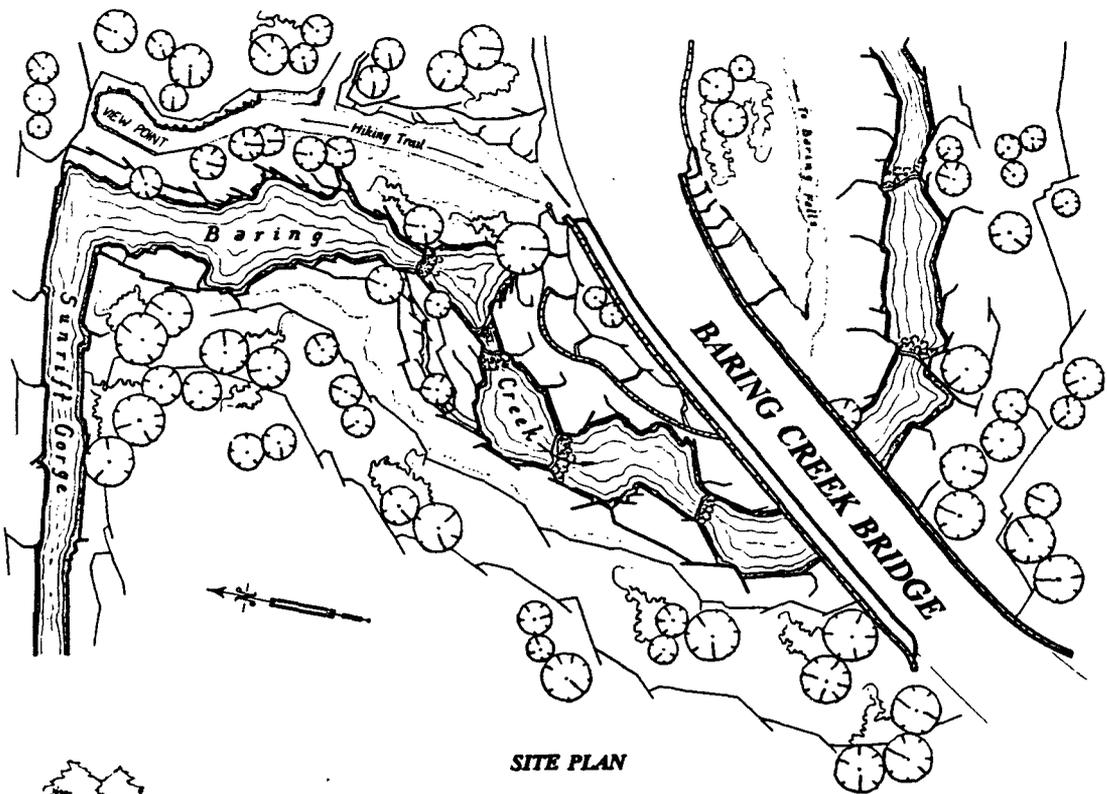
DOWNSTREAM ELEVATION

Scale: 1/8" = 1'-0"

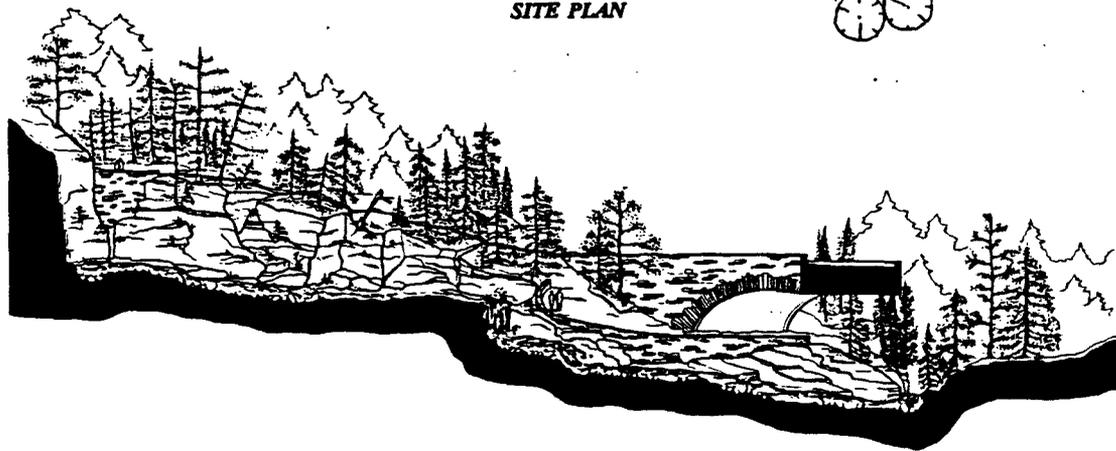


Baring Creek Bridge elevation based on the National Park Service Branch of Plans and Design drawings PG-264-A and B.

Jessica Gibson-Witmer, 1950. Albert DeBruin, 1901.  
 GOING-TO-THE-SUN ROAD: BARING CREEK BRIDGE (1931)  
 40 MILES EAST OF WEST GLACIER IN BLAINE NATIONAL PARK  
 WEST BLAINE COUNTY, MONTANA  
 1:10,000



SITE PLAN



SITE SECTION  
Section taken through creek bed.

Scale: 1/16" = 1'-0"

