National Park Service
U.S. Department of the Interior

Cultural Landscape Inventory
Stevens Canyon Highway

Mount Rainier National Park

November 2004

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Mount Rainier National Park

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Part 1

Executive Summary

General Introduction to the CLI

The Cultural Landscapes Inventory (CLI) is a comprehensive inventory of all historically significant landscapes within the National Park System. This evaluated inventory identifies and documents each landscape's location, physical development, significance, National Register of Historic Places eligibility, condition, as well as other valuable information for park management. Inventoried landscapes are listed on, or eligible for, the National Register of Historic Places, or are otherwise treated as cultural resources. To automate the inventory, the Cultural Landscapes Automated Inventory Management System (CLAIMS) database was created in 1996. CLAIMS provides an analytical tool for evaluating information associated with the CLI.

The CLI, like the List of Classified Structures (LCS), assists the National Park Service (NPS) in its efforts to fulfill the identification and management requirements associated with Section 110(a) of the National Historic Preservation Act, NPS Management Policies (2001), and Director's Order #28: Cultural Resource Management (1998). Since launching the CLI nationwide, the NPS, in response to the Government Performance and Results Act (GPRA), is required to report on an annual performance plan that is tied to 6-year strategic plan. The NPS strategic plan has two goals related to cultural landscapes: condition (1a7) and progress on the CLI (1b2b). Because the CLI is the baseline of cultural landscapes in the National Park System, it serves as the vehicle for tracking these goals.

For these reasons, the Park Cultural Landscapes Program considers completion of the CLI to be a servicewide priority. The information in the CLI is useful at all levels of the park service. At the national and regional levels it is used to inform planning efforts and budget decisions. At the park level, the CLI assists managers to plan, program, and prioritize funds. It is a record of cultural landscapes treatment and management decisions and the physical narrative may be used to enhance interpretation programs.

Implementation of the CLI is coordinated on the Region/Support Office level. Each Region/Support Office creates a priority list for CLI work based on park planning needs, proposed development projects, lack of landscape documentation (which adversely affects the preservation or management of the resource), baseline information needs and Region/Support Office priorities. This list is updated annually to respond to changing needs and priorities. Completed CLI records are uploaded at the end of the fiscal year to the National Center for Cultural Resources, Park Cultural Landscapes Program in Washington, DC. Only data officially entered into the National Center's CLI database is considered "certified data" for GPRA reporting.

The CLI is completed in a multi-level process with each level corresponds to a specific degree of effort and detail. From Level 0: Park Reconnaissance Survey through Level II:

Landscape Analysis and Evaluation, additional information is collected, prior information is refined, and decisions are made regarding if and how to proceed. The relationship between Level 0, I and II is direct and the CLI for a landscape or component landscape inventory unit is not considered finished until Level II is complete.

A number of steps are involved in completing a Level II inventory record. The process begins when the CLI team meets with park management and staff to clarify the purpose of the CLI and is followed by historical research, documentation, and fieldwork. Information is derived from two efforts: secondary sources that are available in the park's or regions' files, libraries, and archives and on-site landscape investigation(s). This information is entered into CLI database as text or graphics. A park report is generated from the database and becomes the vehicle for consultation with the park and the SHPO/TPO.

Level III: Feature Inventory and Assessment is a distinct inventory level in the CLI and is optional. This level provides an opportunity to inventory and evaluate important landscape features identified at Level II as contributing to the significance of a landscape or component landscape, not listed in LCS. This level allows for an individual landscape feature to be assessed and the costs associated with treatment recorded.

The ultimate goal of the Park Cultural Landscapes Program is a complete inventory of landscapes, component landscapes, and where appropriate, associated landscape features in the National Park System. The end result, when combined with LCS, will be an inventory of all physical aspects of any given property.

Relationship between the CLI and a CLR

While there are some similarities, the CLI Level II is not the same as a Cultural Landscape Report (CLR). Using secondary sources, the CLI Level II provides information to establish historic significance by determining whether there are sufficient extant features to convey the property's historic appearance and function. The CLI includes the preliminary identification and analysis to define contributing features, but does not provide the more definitive detail contained within a CLR, which involves more in-depth research, using primary rather than secondary source material.

The CLR is a treatment document and presents recommendations on how to preserve, restore, or rehabilitate the significant landscape and its contributing features based on historical documentation, analysis of existing conditions, and the Secretary of the Interior's standards and guidelines as they apply to the treatment of historic landscapes. The CLI, on the other hand, records impacts to the landscape and condition (good, fair, poor) in consultation with park management. Stabilization costs associated with mitigating impacts may be recorded in the CLI and therefore the CLI may advise on simple and appropriate stabilization measures associated with these costs if that information is not provided elsewhere.

When the park decides to manage and treat an identified cultural landscape, a CLR may be necessary to work through the treatment options and priorities. A historical landscape architect can assist the park in deciding the appropriate scope of work and an approach for accomplishing

the CLR. When minor actions are necessary, a CLI Level II park report may provide sufficient documentation to support the Section 106 compliance process.

Park Information

Park Name:	Mount Rainier National Park
Administrative Unit:	Mount Rainier National Park
Park Organization Code:	9450
Park Alpha Code:	MORA

Property Level and CLI Number

Property Level:	Landscape
Name:	Stevens Canyon Highway
CLI Identification Number:	To be completed
Parent Landscape CLI ID Number:	To be completed

Inventory Summary

Inventory Level:

Completion Status:	Level 0
Level 0	
Date Level 0 Data Collected:	1998
Level 0 Data Collection:	Susan Dolan
Date Level 0 Entered:	1998
Level 0 Data Entry Recorder:	Susan Dolan
Level 0 Site Visit:	Yes
Level I	
Date Level I Data Collected:	6/28/2004
Level I Data Collection:	K. J. Ackerson, M. Davison, S. Dolan, J. H. Dykstra, J. Mcnett, D. L. Schaible, L. K. Smith
Date Level I Entered:	11/19/2004
Level I Data Entry Recorder:	M. Davison
Level I Site Visit:	Yes
Level II	
Date Level II Data Collected:	11/19/2004
Level II Data Collection:	K. J. Ackerson, M. Davison, S. Dolan, J. H. Dykstra, J. Mcnett, D. L. Schaible, L. K. Smith
Date Level II Entered:	11/19/2004
Level II Data Entry Recorder:	M. Davison
Level II Site Visit:	Yes

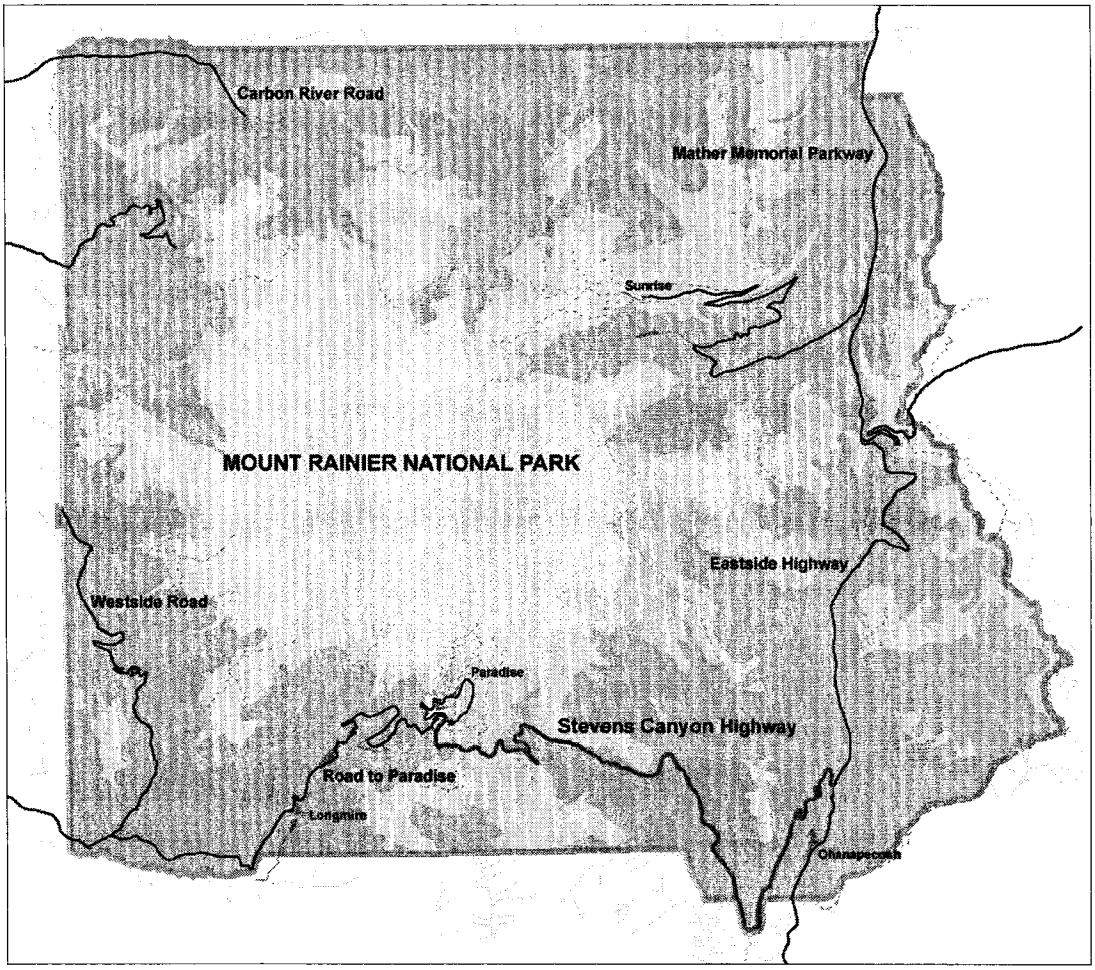
Cultural Landscapes Inventory Hierarchy Description

This Cultural Landscape Inventory documents the Stevens Canyon Highway as one cultural landscape. Therefore, the road and associated features including bridges, tunnels, guardwalls, retaining walls, turnouts, rock cuts, specimen trees and culverts are considered part of the cultural landscape.

Inventory Unit Description

The Stevens Canyon Highway is a 18.992-mile linear landscape that was designed by landscape architects and civil engineers as a scenic drive through public land. The alignment of the Stevens Canyon Highway was carefully chosen to showcase the spectacular scenery, while carrying vehicles through Stevens Canyon and around Backbone Ridge. Additionally, the road links the major developed areas on the east and west side of the park including Longmire, Paradise, Ohanapecosh and Sunrise. Stevens Canyon Highway also provides access to numerous other attractions along the route including Box Canyon, Reflection Lakes, Backbone Ridge, Inspiration Point, and various trailheads.

Location Map



Map of Mount Rainier National Park showing the location of Stevens Canyon Highway within the park.

Boundary Description

The boundary is defined by the National Historic Landmark District (NHLD) nomination of 1997 as 30' on either side of the centerline of the road, for a distance of 18.992 miles and incorporating all of the structures associated with the road including the road bed, shoulders, turnouts, rock cuts, vegetation, bridges, tunnels, ditches, culverts, retaining walls, and guardwalls. However, this boundary description suggests a more delineated and "tighter" boundary for the road than that which is perceived in the experience of the landscape. For example, in certain segments along the road, the physical boundaries may narrow, such as between a rock cliff on the inside and a steep down slope on the outside edge. In other segments, the apparent boundaries of the road broaden into the entire viewshed from the road. In other words, the 30' on either side of the centerline definition is inadequate to encompass all of the characteristics and features of the road. The boundary actually fluctuates along the length of the road, but is accurately approximated by 100' either side of the centerline.

GIS File Description

The GIS files contain landscape feature data pertinent to the Cultural Landscape Inventory for the Stevens Canyon Highway. The features are located using a linear referencing system. This process utilized the Federal Highway's VisiData which was combined with historic resource information from the CLI to produce a single dataset in a tabular format. The dataset was spatially mapped in GIS software (ArcGIS 8.3) using the "Route Events" wizard tool. In addition, each feature was given a unique identity number, noted in miles, beginning with milepoint (MP) 0.000 at the west end of the road where it intersects with the Nisqually Road. The end point is at the Stevens Canyon entrance station where the road intersects with the Eastside Highway, MP 18.998.

Regional Context

Political Context

The Stevens Canyon Highway is owned by the federal government, and is part of Mount Rainier National Park, managed by the National Park Service. The 18.992-mile route is located in Pierce County, Washington State.

Cultural Context

The Stevens Canyon Highway is a linear landscape with areas along the corridor where visitor services and waysides provide expanded boundaries for the road as a landscape system. These areas vary in size and type from large structures including the two tunnels and five bridges, to informal turnouts and stone guardwalls along the road.

Site Plan

Site plan showing major structures and natural features along the Stevens Canyon Highway.

Chronology

Year	Event	Description
2000 BC - 1917 AD	Established	Ancestors of the Yakama people developed and used Chinook Pass Trail for east-west travel over the Cowlitz Divide.
1880 AD - 1880 AD	Event	Large forest fire ripped through Stevens Canyon between Reflection Lakes and the Cowlitz divide.
1899 AD –1899 AD	Established	Congressional Act establishes Mount Rainer National Park.
1904 AD –1904 AD	Established	Initial survey for Stevens Canyon Highway undertaken by U.S. Army Corps of Engineers, with authorization by the Sundry Civil Appropriations Act. The route was to be located north of present Stevens Canyon Highway.
1907 AD –1907 AD	Established	Mount Rainier was the first national park to allow visitors to enter by automobile and the first park to charge an entrance fee.
1910 AD –1910 AD	Built	Government Road (Nisqually Road) completed.
1912 AD –1912 AD	Designed	In his annual report, Superintendent Edward S. Hall stated that a survey should be made for a complete system of roads in the park with the object of "extending the present road around the east and north sides of the mountain." Hall noted that the roads in the park "should be constructed at the lowest practicable elevation" and that if "all points of interest can not be reached in this way, branch roads should be built to them."
1913 AD –1913 AD	Built	Ethan Allen replaces Hall as Superintendent. Allen noted that automobile usage in MORA increased by more than 76% in the year between 1912 and 1913. The 1913 report described the recently completed trail from Reflection Lakes to the Ohanapecosh Ranger Station as a "valuable link" in a much desired connection.
1916 AD –1916 AD	Designed	Second location survey undertaken for Stevens Canyon Highway to connect the existing Government Road which ended at Inspiration Point to McClellan Pass

		Highway (now Mather Memorial Parkway). Proposed road length was 26 miles with 6% grade.
1916 AD –1916 AD	Designed	In a letter from J.G. Morgan, Engineer, to Park Superintendent Reaburn he stated that the area from Reflection Lakes to the Cowlitz Divide "is through a large burnt over area where little clearing will be necessary." He also stated that the road grade will not exceed 6%. His original survey called for "all bridges to be constructed of timber, unless otherwise specified and that retaining walls be built of rock or timber."
1917 AD –1917 AD	Altered	In a decree from Stephen T. Mather, NPS Director, fishing is barred at Reflection Lakes for a period of three years to allow depleted stocks to grow.
1921 AD –1921 AD	Event	In a telegram from W. H. Peters, Superintendent, to NPS Director Mather, he advised that the first automobile had reached the Paradise Inn.
1925 AD –1925 AD	Designed	Mount Rainier started five-year road development program, which included proposal for the alignment of Stevens Canyon Highway.
1925 AD –1925 AD	Designed	NPS landscape architect, Ernest A. Davidson and Bureau of Public Road (BPR) engineer C. R. Short undertook joint reconnaissance survey for Stevens Canyon Highway. The route they proposed dropped down from Nisqually Road near Inspiration Point to Reflection Lakes, along Steven Canyons to the Muddy Fork of the Cowlitz River, then up river to Ohanapecosh before heading northeast to cross over Cayuse Pass.
1927 AD –1927 AD	Built	Rock barriers and crushed gravel road surface completed for west segment of Stevens Canyon Highway up to Inspiration Point. Guided Motor Car tours used this segment of road to reach Paradise.
1928 AD –1928 AD	Designed	Mount Rainier became the first national park to have a master plan for the development of all roads, concessionaire services and administrative facilities.
1928 AD –1928 AD	Designed	BPR surveyed new route from Paradise Valley to Cayuse Pass. The proposed road bench was to be constructed with a "minimum 18'-wide 1927 standard and a maximum grade of 6%."

1929 AD –1929 AD	Designed	BPR surveyed possible alternative 'high-line' route to climb "higher regions between Reflection Lakes and Muddy Fork of the Cowlitz" with intention of offering better access to the base of the mountain.
1930 AD –1930 AD	Designed	BPR's final survey report produced. The route included going one mile outside of the park boundary around Backbone Ridge.
1931 AD –1931 AD	Established	Park Superintendent Tomlinson's annual report states that the construction of an east-west connection (Stevens Canyon Highway) should be given priority over other park projects.
1931 AD –1931 AD	Altered	NPS Director Horace M. Albright rejects route from Cowlitz Divide to Cayuse pass as "too expensive and destructive of the park landscape." Albright orders new survey for route that would follow Stevens Creek then run parallel to the Ohanapecosh River up to Cayuse Pass.
1931 AD –1931 AD	Established	Mount Rainier boundary extended on the east side of the park.
1931 AD –1931 AD	Built	Construction began segment 4-A between the Nisqually Road intersection at Inspiration Point and Louise Lake. The contract was awarded to the lowest bidder, Holmberg& Norman, Inc.
1931 AD –1931 AD	Designed	The 1931 master plan called for parking along Stevens Canyon Highway at the following locations: Reflection Lake parking, 50 to 75 cars. Observation Point, 12 to 20 cars. Martha Falls Loop, 6 to 12 cars. Sunbeam Falls, 6 to 12 cars. Stevens Canyon Tunnel, 3 to 6 cars at each portal. Box Canyon Muddy Fork Bridge, 12 to 20 cars. Observation Butte at the top of the Cowlitz Spur, 200 cars. Cowlitz Divide Summit, 50 to 75 cars
1931 AD –1957 AD	Built	Construction of the 21.2-mile Stevens Canyon Highway began at the intersection with the Nisqually Road above Narada Falls.
1932 AD –1932 AD	Designed	Park master plan called for the construction of a road spur that would originate from the south end of Backbone Ridge and head up the Cowlitz Divide until it

		terminated at Cowlitz Pass. The "Cowlitz Spur" proposal was later abandoned.
1933 AD –1933 AD	Designed	The 1933 master plan broke the Stevens Canyon Highway into six segments to be built in increments. These sections were labeled 4-A, 4-B, 4-C, 4-D, 4-E, 4-F.
1933 AD –1933 AD	Built	Grading, felling, and grubbing work completed on segment 4-A of the Stevens Canyon Highway.
1933 AD –1933 AD	Altered	The 1933 master plan called for considerably less parking along the Stevens Canyon Highway compared with the 1931 master plan. Plans for parking at Sunbeam Falls were reduced to 5 or 6 cars, parking at Observation Point was reduced to 6 to 12 cars, parking at the Cowlitz Divide Summit was reduced to 25 to 50 cars, parking at the Observation Butte was reduced to 100. The reduction in parking equated to an average loss of 134 parking spots along Stevens Canyon Highway when compared to the 1931 park master plan.
1933 AD –1933 AD	Designed	In a letter from F.A. Kittridge, Chief Engineer, to Superintendent Tomlinson, he estimated that Stevens Canyon Highway would only be accessible for five months per year. Kittridge also noted that the proposed Stevens Canyon Highway would not add "materially to the scenic drives of the Park" and will "have little more than provided a means of getting through the country enroute to Ohanapecosh and Sunrise objectives."
1933 AD –1933 AD	Designed	In correspondence from the Superintendent Tomlinson, to the NPS Director, he argued in favor of the Stevens Canyon Highway route. He advised the alternative route was not within the Park boundary.
1933 AD –1933 AD	Built	Clearing and grading began on Stevens Canyon Highway segment 4-B. The contractor for the project was Colonial Building Company of Spokane. The 24' road bench included tangent curves and a 5'-wide ditch. The contractor was also responsible for the construction of masonry retaining and guardwalls along the switchback section.
1934 AD –1934 AD	Built	Clearing and grading began on segment 4-E1.

1934 AD –1934 AD	Built	Felling and milling of logs began for the construction of a timber bridge at the Ohanapecosh River crossing.
1934 AD –1934 AD	Built	Clearing and grading began on segment 4-C1.
1935 AD –1935 AD	Built	The Sunbeam Creek box culvert was completed.
1935 AD –1935 AD	Built	Grading work began on the 2.95 mile segment, 4-E2 of Stevens Canyon Highway. This segment was divided into 2 units. Unit 1 was contracted out to A.C. Greenwood. Blasting to excavate the road bench caused rocks to tumble down the slopes, so the contractor was forced into felling trees to form a grid that would catch the falling rocks. This section included the construction of guardwalls and retaining walls by the contractor. Roadside cleanup included removing snags, and painting the scars on damaged trees.
1935 AD –1935 AD	Built	Clearing work began on segment 4-C2. The contract for clearing was awarded to Erickson, Johnson and Smith Brothers of Naches. This segment traversed steep terrain, forcing the men to use pack trains to carry supplies. Work consisted of slashing the small growth with axes or brush hooks, although large snags were retained.
1935 AD –1935 AD	Built	Grading and clearing was completed on segment 4-B.
1935 AD –1935 AD	Established	BPR began preparing plans to request right-of –way permits to extend the Backbone Ridge segment through the Columbia National Forest (Gifford Pinchot National Forest).
1936 AD –1936 AD	Built	Construction started on a 1.2 mile segment of road, 4-C2, east of Stevens Creek. This included the construction of the upper tunnel.
1936 AD –1936 AD	Established	The right of way for the approved on the segment of Stevens Canyon Highway that ran through the Columbia National Forest (Gifford Pinchot National Forest).
1936 AD –1936 AD	Built	Segment 4-E2 (Unit 1) completed.
1937 AD –1937 AD	Built	Stevens Canyon Tunnel completed.
1937 AD –1937 AD	Built	Temporary wooden bridge constructed along Backbone Ridge segment.

1937 AD –1937 AD	Built	Clearing and grading of segment 4-E2 (Unit 3) began. This segment measured 1.373 miles and included a 24'-wide roadbed.
1937 AD –1937 AD	Built	Work on segment 4-E2 (unit 2) began by contractor Lucich and Company of Seattle. This 1.32 mile segment was located on the west side of Backbone Ridge. This contract included the construction of stone guardwalls.
1938 AD –1938 AD	Built	West side of Stevens Canyon Tunnel excavated and steel corrugated culvert on west side of tunnel completed.
1938 AD –1938 AD	Built	Clearing and grading of segment 4-E2 (unit 3) completed.
1938 AD –1938 AD	Built	Segment 4D was divided into 2 units. The first unit measured 0.69-miles. The second unit measured 2.348-miles. The contract for the first unit was awarded to the Sam Orino company, the second unit was awarded to the Lucich Company of Seattle.
1939 AD –1939 AD	Built	Stevens Canyon Tunnel fully excavated and stone-facing on portals neared completion.
1939 AD –1939 AD	Built	Grading work on segment 4-D (unit 1) completed.
1940 AD –1940 AD	Built	Plans approved for segment 4D, the Nickel Creek Bridge and two viaducts. The viaducts were specified to include stone-facing masonry on the concrete structure.
1940 AD –1940 AD	Built	Contract for segment 4-D (Unit 2) was awarded to the Lucich Company. This segment was located 1.5-miles east of Backbone Ridge. Work on this segment included heavy rock blasting. This rock was used to stabilize embankment slopes on other parts of the route. Work on this segment also included the planting of trees and shrubs along berms and low embankments.
1940 AD –1940 AD	Built	Contractor Sam Orino began construction of the Stevens Creek Bridge. The Stevens Creek Bridge was specified as a rigid frame, tee beam design structure with a 78' arch.
1940 AD –1940 AD	Built	East side Highway officially opened.

1941 AD –1941 AD	Built	Stevens Creek Bridge completed.
1941 AD –1941 AD	Built	The contract for the construction of the Box Canyon Muddy Fork Bridge and Nickel Creek Bridge awarded to contractor Sam Orino.
1941 AD –1941 AD	Repaired	Contractor E.L. Cates of Trail, Oregon, began work for reconstruction grading on segment 4-D (Unit 2) and segment 4-E2 (Unit 1) as well as grading for segment 4-D (unit 3).
1941 AD –1941 AD	Built	The United States enters WWII and construction on Stevens Canyon Highway is brought to a halt. The remaining Contractor, Sam Orino, was forced to suspend operations on building bridges on account of the lack of steel due to the war. No further work was done on the road until after the end of the war.
1947 AD –1947 AD	Built	BPR notified the park that they were preparing to accept bids on the remaining work on Stevens Canyon Highway, which would include construction of the Box Canyon Muddy Fork Bridge and Nickel Creek Bridge.
1952 AD –1952 AD	Built	Box Canyon Muddy Fork Bridge completed.
1952 AD –1952 AD	Built	Box Canyon Tunnel completed.
1952 AD –1952 AD	Built	Contractor, Fred H. Slate Co., constructed two reinforced concrete viaducts along Stevens Ridge.
1954 AD –1954 AD	Built	BPR reported that four bids had been received for the segments 4-A, B, C, D, E, slope stabilization, tunnel lining and surfacing projects. J.A. Terteling & Sons Inc. were awarded the contract with a bid of $554,406.35.
1954 AD –1954 AD	Designed	The Branch of Landscape Architecture at the NPS Western Division, prepared plans for interpretive facilities and directional signage to be placed at Inspiration Point, as well as the Quarry Overlook, Box Canyon, and Backbone Ridge.
1955 AD –1955 AD	Built	Contract awarded to Wayne Construction Co of Seattle for the construction of Ohanapecosh River Bridge and Falls Creek Bridge.

1956 AD –1956 AD	Built	Secretary of the Interior Douglas McKay announced that the Mission 66 program planned for an estimated $10 million over the following 10 years for comprehensive development and improvement in Mount Rainier National Park.
1957 AD –1957 AD	Event	Stevens Canyon Highway officially opened on September 4.
1964 AD –1964 AD	Built	Stevens Canyon Entrance Station at the intersection with the Eastside Highway completed.
1966 AD –1968 AD	Built	Stevens Canyon Highway resurfaced with bituminous asphalt by Cascade Asphalt Paving Co.
1966 AD –1968 AD	Repaired	World record snowfall event during the winter (1,122") caused damage along the road. A guardwall at Backbone Ridge was washed out and walls at Stevens Canyon Tunnel and Inspiration Point were damaged.
1997 AD –1997 AD	Established	The Mount Rainier National Historic Landmark District was established, which included the Stevens Canyon Highway.

Statement of Significance

Stevens Canyon Highway is a historic road within the Mount Rainier National Historic Landmark District (NHLD). As one part of the early Mount Rainier National Park master plan, Stevens Canyon Highway is significant for its association with the national park system's earliest and most influential surviving master plan. It also takes its significance from its naturalistic landscape engineering as a scenic park highway that was artfully integrated with the natural landscape. The NHLD is nationally significant for its association with the events of early National Park Service (NPS) master planning (criterion A) and the design style of naturalistic landscape architecture (criterion C) perpetuated by the NPS in the period between the First and Second World Wars. The period of significance for the NHLD of Mount Rainier National Park is 1906 - 1957, broadly incorporating the earliest and latest rustic period development in the park. The 19-mile Stevens Canyon Highway was planned, designed, and constructed during the historic period, although construction was interrupted by World War II. When the project was resumed, it was completed according to the original plans. Stevens Canyon Highway was the final road to be completed from the early master plan for Mount Rainier National Park.

Mount Rainier's master plan, begun in 1926, was the first National Park Service (NPS) master plan to be conceived and it was highly influential in the conception of master plans for other parks. The NPS Division of Landscape Architecture produced master plans that preserved parks while addressing the needs of all the park's users and constituencies. The Mount Rainier master plan envisaged the infrastructure of the park as a system of scenic highways and developed areas, to be known as rustic park villages, which would accommodate visitors but at the same time delimit their vehicular access within the park. The master plan was drawn up in the 1930s and executed in the naturalistic style of landscape architecture and rustic style of architecture. The circulation patterns at Mount Rainier, which include a sophisticated hierarchy of roads and trails are a key part of the early master plan. Trails, utility roads, and scenic highways were each conceived as independent but integrated systems, and each type had its own cross section, geometric specifications, maximum allowable grades, and typical construction details. Each circulation system has its own sheet in the master plan showing the extent of road or trail development throughout the park. In practice, these circulation systems were effectively integrated, creating a complex and efficient total system of circulation that assured each set of circulation needs were met in a carefully coordinated way. The main scenic highways in the park are Nisqually Road, Westside Road, Eastside Highway (Route 123), Mather Memorial Parkway (HW 410), Yakima Park Highway, Mowich Lake Entrance Road, Carbon River Entrance Road, and Stevens Canyon Highway.

The first road to be built in the park was the Nisqually Road, constructed by the Army Corps of Engineer's between 1906 and 1916. However, it was not until the 1920s and 1930s that the major road construction work in the park was accomplished. The task of making the road layout in the master plan a reality was given to NPS landscape designers who worked in close collaboration with engineers from the U.S. Bureau of Public Roads (BPR). The interbureau agreement between the NPS and the BPR played a fundamental role in guaranteeing the aesthetic quality and technical excellence of roads within the park. Under this arrangement, which began in the 1920s and was formalized in 1926, the NPS landscape architects outlined the general

location and aesthetics of each project. BPR engineers then conducted surveys and developed construction drawings for NPS approval. Great care was taken to ensure that upgrades to existing roads were constructed as sensitively as possible and the new roads and facilities harmonized with their local environment. This collaboration, together with the role the Stevens Canyon Highway played in early NPS master planning, imparts particular significance on the road under criterion A.

The successful master plan for Mount Rainier quickly became a blueprint for other parks during an era that is widely regarded as the "Golden Age" of national park road building. All of the roads within the park continue to define the automotive circulation of the park. That circulation pattern, approved by Horace Albright in 1929, describes a great loop from the Seattle/Tacoma area, via the Mountain Highway to Ashford, entering the park at Ashford, proceeding from Paradise via the Stevens Canyon Highway to the southeast corner of the park, and exiting the park to the north via the Mather Memorial Parkway, returning to the Puget Sound communities via Route 410. Only the southern and eastern sides of the mountain, therefore, are traversed by this primary corridor; all other roads, including the West Side Road and the Yakima Park Highway, are spur roads and therefore side trips. Stevens Canyon Highway was to be the last road to be built resulting from the early master planning for Mount Rainier, the only connection road within the park between the east and west entries.

The workmanship, materials, and feeling of the road are consistent with the rest of the park's road system. Even the later portions of the road (between Stevens Creek and the Cowlitz Divide) are an integral part of the NHLD. Therefore the two bridges, Nickel Creek and Muddy Fork Cowlitz and one tunnel, Box Canyon, completed in the early 1950s, as well as the sections of roadway on which grading was completed at that time, are included as contributing resources in the NHLD. The construction of these later portions of road (stone facing on reinforced concrete arches, for example) is completely consistent with the design and construction completed in the 1920s and 1930s as part of the master plan for the park. Certain postwar portions of the later roadway (along Stevens Ridge and Backbone Ridge) employed sections of concrete viaducts with stone facing on the side walls to minimize excavation and scarring while traversing very steep hillsides and blend the structure into the landscape. This construction is typical of prewar park road design, and are included in the NHLD because they are integral to the overall character of the road corridor, and are a logical extension of the principles of NPS road construction.

In association with significant design and construction, the Stevens Canyon Highway is an excellent example of naturalistic landscape design and rustic architecture. NPS designers of the 1920s and 1930s were heavily influenced by the 18th-century picturesque and 19th-century naturalistic movements, which embodied rustic and naturalistic design principles. In borrowing from these design principles, NPS landscape architects aimed to harmonize artifice and nature by minimizing the visual impact of constructed developments, while accentuating the picturesque qualities of nature. Accordingly, the primary functions of Stevens Canyon Highway, established in the 1930s, followed the design intent prevalent in this golden era of NPS master planning for scenic highway design. The design of the Stevens Canyon Highway exhibits many characteristics of the naturalistic and rustic design styles, including the minimization of cut and fill, the "naturalization" of road shoulders, rock cuts and fill slopes, the dressing of exposed culverts with stone headwalls to render them inconspicuous, and construction details for naturalistic retaining

walls, guardwalls, and guardrails. Initially, NPS landscape architects advised BPR engineers on the alignment of the highway, ensuring the road blended with the natural topography. BPR engineers surveyed the preferred route, providing detailed plans showing the vertical and horizontal alignment as well as giving specification for the structural design of the major built features. NPS landscape architects provided detailed drawings for the rustic stone facing on bridges, viaducts, box culverts and the Stevens Canyon Tunnel, as well as specifying Type 1 and Type 2 stone guardwalls for the steep fill slope segments. The high standards set by the NPS in the construction of the road included salvaging local stone during grading operations for future construction of structures associated with the road's construction. As a result, features including the bridges and guardwalls matched the color and texture of rock cuts in their vicinity through the use of native stone and organic forms. In addition, the curvilinear alignment and numerous vista turnouts slowed traffic, showcasing the spectacular scenery such as Reflection Lakes, Stevens Ridge, Box Canyon and Mount Rainier.

Today, Stevens Canyon Highway is an integral part of the extant master plan, begun in 1926, for Mount Rainier National Park. The road remains largely unchanged and is an intact example of an early national park scenic highway constructed using the first national NPS standards for road building. The road's naturalistic character is evident in its remaining landscape characteristics and features, namely in the road's spatial organization, circulation patterns, structures, the intact land use, topography, vegetation, views and vistas, small scale features and its pattern of response to natural systems and features,. Given that these patterns and their surviving features, such as stone guardwalls, tunnels, retaining walls, narrow curvilinear alignment, and vista turnouts continue to exist as originally planned, it can be said to have excellent integrity overall to the period of significance.

Part 2

Physical History

Pre-history to 1903

An east-west connection across the Cascades has probably existed for thousands of years. Prehistoric evidence reveals that a trail route linked Mount Rainier to the American River drainage and Yakama territory. This route followed the American River from the west up to the Cascade Crest, over Shriners Peak into the Ohanapecosh River valley on the east side of the park, before passing over the Cowlitz Divide into Cowlitz park. This trail is believed to have been in use for nearly 4,000 years for foot travel and later for horse travel (Burtchard 1998: 118 quoting Smith 1964: 229-238). The trail served as a circulation link between hunting grounds and other places of cultural importance. In 1917, the Yakama people were prevented from using the trail due to NPS enforcement of rules prohibiting hunting in the park. (Awaiting more information from MORA Archaeologist for Pre-history section)

Early Design and Development (1904-1930)

Drawn to the natural beauty and subalpine meadows, Mount Rainier quickly became a focus of attention for tourists, mountaineers, and resort entrepreneurs. Although the Carbon River region and Spray Park area attracted the first tourists, it soon became apparent that tourism at Mount Rainier would gravitate to the mountain's southern slope, in part because routes to the summit were easier from the south. The development of park roads at Mount Rainier began with the Sundry Civil Appropriations Act in 1904 when the U.S. Army Corps of Engineers conducted survey work for a road between The Government Road (Road to Paradise) and the east region of the park. The Army Corps surveyed a route from the head of the American River along the Cascade Crest, over into Ohanapecosh Valley, then up Olallie Creek, over the Cowlitz Divide and into Cowlitz Park. This proposed route was north of present day Stevens Canyon Highway. In 1907, with the improvement of road access to Longmire, Mount Rainier became the first National Park to allow visitors to enter by automobile and the first to charge an entrance fee. The completion of the Government Road (Road to Paradise) enabled automobile travel from the southwestern park boundary to Paradise in 1915.

The earliest road surveys on the southeast side of Mount Rainier National Park were performed in 1904 when the Army Corps of Engineers surveyed a 17-mile wagon road along "the most practical route from the east into the park." The route followed the American River up to the Cascade Crest, over Shriner's Peak into the Ohanapecosh River valley, then up Olallie Creek, over Cowlitz Divide into Cowlitz Park, to later connect with Paradise (Mills 1976: no page). The early "round-the-mountain" road concept, proposed by Corps Engineer Hiram Chittenden in 1907, may be traced to the early survey work. The circuit drive around Mount Rainier would have maximized access for horse-drawn carriages and automobiles in the park. However, this concept was abandoned in the late 1920s, due to changing philosophies about appropriate road development in national parks and the immense challenges inherent in building a road in that day. The topography in the west and north areas of the park restricted development, and any road construction would have greatly impacted the natural resources in these areas. During this early

period in the park's history, the eastern flank of Mount Rainier was beginning to show the first signs of commercial development. Throughout the 1910s, pressure for improved access to the mineral hot springs at Ohanapecosh increased as the area gained in popularity. A heavily rutted wagon road that ran along the Ohanapecosh River valley provided the main access to the hot springs. By 1915, the Park had developed several trails that led from the west side of the park originating at Longmire and Paradise to the Ohanapecosh Hot Springs. In 1915, Superintendent Edward Hall noted the need to develop a comprehensive roads plan for the park to improve access to the eastern and northern portions of the park. In addition, Hall believed the roads in the park "should be constructed at the lowest practicable elevation" and that if "all points of interest can not be reached in this way, branch roads should be built to them" (MORA Archives, Superintendent Annual Report, 1915). By 1918, over 6,000 vehicles traveled the Road to Paradise, and Horace Albright noted that "there was every reason to expect automobile traffic will continue to increase by leaps and bounds (NHLD Nomination, 1997: 52)."

By 1920, a public debate emerged regarding the appropriate extent to which Mount Rainier should be developed. Under pressure from the public and realizing that they would need to better coordinate development, the National Park Service (NPS) developed procedures for devising master plans to limit the overall extent of road construction (NHLD 1997: 54). While the debate continued on a national level, the Mount Rainier National Park continued to add to its infrastructure in response to the pressing needs of the day, which raised local concerns that the NPS mission was threatened. For instance, at Ohanapecosh springs, Superintendent Tomlinson complained that thousands of new visitors would be visiting a corner once seen by a few hundred, and the Park had no facilities for their accommodation. The infrastructure required to accommodate the new visitors would greatly impact the surrounding natural resources. The park practice of development at all cost was seriously called into question by local pressure groups and park staff alike.

Despite calls for reduced levels of development, the reality of inadequate facilities and increasing visitation rates throughout the 1920s highlighted the need for a balanced approach. The master plan for Mount Rainier achieved this balance by calling for new roads that would have a limited impact on the natural resources found within the park. In addition, many of the existing road bridges and associated structures were failing, which further necessitated the need for a roads program. By 1925, it was generally accepted that road construction would be limited to the south, east and west sides of the park. With this in mind, new proposals were developed indicating the areas to be developed, how to connect existing routes, and what alignment the proposed roads would follow. The first road to connect the existing routes began with the construction of the Westside Highway in 1926. This road was to provide efficient access between Paradise and the Carbon River region, connecting the Road to Paradise with the Carbon River spur road, the two most popular routes for visitors.

With increased access to the natural wonders of the park's west side came the realization that the east side had just as much to offer in terms of natural beauty. At this time, Park Superintendent Tomlinson again noted the popularity and increasing level of development near Ohanapecosh. With this in mind he incorporated the assistance of Thomas Vint, who was developing a NPS landscape architecture division in San Francisco that would handle all aspects of road planning and design. Tomlinson and Vint wrote an "Outline for Development" in 1926,

which would include a road through Stevens Canyon along the southern slopes of the mountain that would connect Paradise and the Ohanapecosh region (Carr, 1998, 87). It soon became clear that access between the developed areas in the southwest of the park and emerging developments on the east side would be via Stevens Canyon. Stevens Canyon, on the west side of the Cowlitz Divide, was already known for its array of wildflowers, waterfalls, and magnificent vistas.

In 1925, Mount Rainier developed a five year road development program to survey and study potential roadways, including the aforementioned road across the south side of the mountain via Stevens Canyon. In that same year, the NPS and Bureau of Public Roads (BPR) signed a Memorandum of Agreement to share responsibility for all major road projects in the national park system. Ernest A. Davidson, an NPS landscape architect, and C.R. Short, from BPR conducted a preliminary survey of the park's south side in October 1926. Their proposal called for constructing a road from Inspiration Point to Reflection Lakes along the lower slopes of the Tatoosh Range, before entering Stevens Canyon and exiting at the Muddy Fork of the Cowlitz River. By following the river up to Ohanapecosh Park, the road would eventually connect with the Mather Memorial Parkway at Cayuse Pass (HAER No. WA-123: 4).

The NPS initiated a second survey in 1928 with BPR to find alternative routes between Inspiration Point and Cayuse Pass. The report included two possible junctions with the Road to Paradise, the first at Inspiration Point and the second at a location one mile further up the valley from which the route dropped down into Stevens Canyon toward the Muddy Fork of the Cowlitz River. From the Muddy Fork (Box Canyon) three alternative routes were proposed to connect with the east side of the park. The first was identical to Short and Davidson's previous recommendation. The second called for the road to drop further down Stevens Canyon to Nickel Creek before following the river via a series of switchbacks until it could pass around the south end of Backbone Ridge. The third alternative would ascend the Cowlitz Divide where it crossed the Ohanapecosh River near Indian Bar country, eventually connecting with the Mather Memorial Parkway at Cayuse Pass (HAER No. WA-123: 5).

None of the alternatives from the two surveys satisfied the NPS, so they requested a third survey executed by BPR engineer Robert N. Kellogg on September 10, 1929. Kellogg's proposal called for the alignment of the road to lead from Inspiration Point to Reflection Lakes. However, from Reflection Lakes he proposed that the route ran north of Louise Lake and followed the south and west slopes of Mazama Ridge. The new route would descend to Williwaukas Creek and over to the Muddy Fork before climbing another 1.1-miles to the upper end of the West Fork at Nickel Creek Meadows. In his final report in 1930, Kellogg recapitulated his previous survey lines as far as the Muddy Fork of the Cowlitz, but from there he suggested routes heading southeast around Backbone Ridge or south along the Cowlitz Divide toward the park boundary. The proposed route would then drop down to the Ohanapecosh River watershed, crossing the river just north of Cougar Creek and then head upstream across Deer and Dewey creeks to Cayuse Pass. Kellogg also proposed a "scenic spur road" to the subalpine country of Cowlitz Park (HAER No. WA-123: 5).

The ongoing debate highlighted the difficulties in selecting a final alternative. The proposed routes appeared to be either too expensive to construct or appeared to be impracticable from an engineering perspective. Meanwhile, the White River Road to Yakima Park and the forthcoming

opening of the Mather Memorial Parkway led Superintendent Tomlinson to urge for the selection of a preferred alternative and the speedy construction of the new east-west connecting road to alleviate administrative needs. Without direct access to the east side of the park all park service and patrol vehicles were required to make a 135-mile trek from Longmire to Sunrise. He warned that in the best of circumstances the road would not be complete for six to seven years, by which time visitation rates were expected to exceed 600,000 per year (HAER No. WA-123: 5).

In 1930, NPS Director Horace M Albright toured the proposed routes for the Stevens Canyon Highway. Based on his observations, Albright rejected the "high line" from the Cowlitz Divide via Indian Bar, Double Peak and Chinook Creek to Cayuse Pass as too expensive and destructive of the park landscape. Instead, Albright directed attention to a route down Stevens Creek Canyon and up the Ohanapecosh River to Cayuse Pass, and ordered a new survey. Two routes were drawn between Reflection Lakes and the Muddy Fork of the Cowlitz River. One ascended Stevens Ridge and dropped into the Muddy Fork Canyon near the Cowlitz Glacier, but this alternative was rejected due to construction costs. However, the second route following the northern slopes of Stevens Canyon soon became the preferred alternative.

In 1933, the alignment of a six-mile road segment was located between the Eastside Highway (still under construction) and the southern end of Backbone Ridge. The following year, a survey team proposed the construction of a bridge and tunnel at the Muddy Fork River's spectacular crossing at Box Canyon which would connect the Stevens Canyon segment with a proposal to align the road along the west flank of the Cowlitz Divide. This final segment would connect with the segment proposed for the east side of Backbone Ridge that descended via a series of switchbacks to the Ohanapecosh River.

However, although the geographic location of the route was accepted, the final alignment of the eastern section was still being debated by NPS staff and BPR engineers alike. With the eastern boundary of the park extended in 1931 to include the Ohanapecosh area, Superintendent Tomlinson reported that construction of the east-west connection should be given the highest priority of all park projects (HAER No. WA-123: 5). It was evident that construction on the Stevens Canyon Highway had to begin and that the final alignment of the route could be surveyed while the agreed-upon route from Inspiration Point to Stevens Creek was under construction. Contracts were secured, and in July 1931 groundbreaking occurred on the first section of the road from Inspiration Point to Reflection Lakes, section 4A of the Steven Canyon Highway road project.

Stevens Canyon Highway: Design and Construction (1931-1957)

Stevens Canyon Highway was to be the last road to be built resulting from the early master planning for Mount Rainier, the only connection road within the park between the east and west entries. By the late 1920s prevailing philosophy for park road design had eliminated the northern section of Hiram Chittenden's 1907 proposed loop that would have encircled the mountain (Carr 1998: 213). Instead, the proposed route for the northern section became part of the Wonderland Trail and the area north of the mountain remained a designated wilderness. The preferred alignment and design of the structures along Stevens Canyon Highway represented the culmination of twenty years of road building experience in the park. The highway was to traverse

natural features of outstanding beauty, with all aspects of the roads design geared towards presenting these features in their best light while also serving to protect them. Stevens Canyon Highway is a product of the early and successful cooperation between BPR and NPS landscape architects. The final design afforded a balanced solution to the difficult problem arising from those who wished for limited access to the park and protection of the resources with those who wanted more roads to improve access to the natural wonders.

By 1931, construction was underway on the west segment of the road from Inspiration Point to Reflection Lakes. The alignment of the route was surveyed in 1926 and incorporated into the park's Master plan in 1928. During this period a Memorandum of Agreement (MOA) was signed between the NPS and BPR. This relationship between the NPS and BPR began when the head of the NPS, Charles Mather, signed the MOA with BPR assuring that road projects would be executed in the context of a common vision that was created and monitored by the NPS landscape architecture division in San Francisco. It was landscape architect Thomas Vint who had the vision to create a non-traditional landscape architecture division within the NPS which incorporated not only landscape architecture but architecture, planning, and civil engineering. The landscape architecture division was able to communicate their concepts to BPR in both the drafting room and in the field. In 1929, Vint said of his group, "they had succeeded in making good landscape men out of our park superintendents and the project engineers of the Bureau of Public Roads" (Carr 1998: 194).

Stevens Canyon Highway is therefore the product of a team effort which included the NPS, BPR, and the various contractors who worked on construction of the highway between 1931 and 1957. The role of BPR was to develop and plan the engineering aspects of the road for both the road itself (cross section) and its associated structures as well as supervising the contractors. The NPS landscape architecture division was responsible for producing guidelines for preservation of natural and scenic features as well as specifications for guard walls, retaining walls, and the stone facing on bridges, tunnels, viaducts, culverts and other structures along the highway. The NPS and the BPR worked together to maximize the road experience for the park visitors. The contractors, drawn from Washington and Oregon, performed the difficult work which required unusual schedules due to the shortened building season and creative building techniques due to the rugged terrain and remoteness of the project sites.

The highway was initially divided into six segments due to the complexity and the scale of the project. This was reduced to five segments by NPS director Horace M. Albright. He had originally visited the park in 1931 with the intention of breaking the impasse regarding the alignment of the eastern segment of the highway. After a tour of the proposed routes, Albright decided to eliminate the sixth segment, a spur road up the Cowlitz Divide that would have led to a proposed campground. Albright deemed this too great an impact on the natural environment as well as being too expensive. In regards the east section, he approved the route that skirted the east and west flanks of Backbone Ridge. With the alignment decided, the park was able to officially announce the five phases for construction of Stevens Canyon Highway:

4A (1.5 miles)	Extending from Inspiration Point to Reflection Lakes
4B (3.0 miles)	Extending from Reflection Lakes to Stevens Canyon
4C (4.0 miles)	Extending from Stevens Canyon to Muddy Creek (Box Canyon)
4D (5.0 miles)	Extending from Box Canyon to Cowlitz Divide (Backbone Ridge)
4E (8.5 miles)	Extending from Backbone to junction with Eastside Highway

While construction on the western segment was progressing at a steady rate, the eastern alignment of the route still had to be surveyed. Following Albright's decision, it was decided that construction phase 4E could commence in tandem with phase 4A and eventually the project phases would be completed when the road joined at the bridge over Box Canyon. With construction work possible at both ends of the route, simultaneous contracts were let to different contractors for each phase of the work; occasionally the same contractor would be used twice if there was no overlap in the phases. The initial contracts covered the clearing and grading of the road, and construction of the stone guardwalls, retaining walls, rock cuts, turnouts, and culverts. Separate contracts were awarded for more complex building projects such as viaducts, bridges and tunnels. A final contract was awarded to pave the entire highway after work on the five phases had been completed. The roadway was opened in September 1957, when a large crowd gathered at Box Canyon to view the official ribbon cutting by the wife of the park superintendent.

Phase 4A - Inspiration Point to Reflection Lakes

Phase 4A covered a 1.5-mile segment of highway between Inspiration Point and Reflection Lakes. In July, 1931, the contractor, Holmberg and Norman Inc., began clearing and grading, which took until October 1933 to complete. As part of the construction work in this segment, a talus slope across from Inspiration Point required a stepped series of retaining walls to catch the debris that routinely fell down the slope. This segment, at an elevation of 4,800', also required large rock cuts with stone retaining walls located on the fill side. In addition, this short stretch of road required twenty-two concrete pipe culverts and two cast in place concrete box culverts with stone headwalls. As part of the Reflection Lakes development, the NPS used 2' diameter logs as curb elements for the two large turnouts adjacent to the lake. These were later replaced by two stone guardwalls before the road opened in 1957.

Phase 4B - Reflection Lakes to Stevens Creek

Phase 4B covered a 3.0-mile segment of highway between Reflection Lakes and Stevens Creek. The contractor, Colonial Building Company of Spokane began construction in November 1933 on the clearing and grading, which was completed by October, 1935. This segment of the road was resurveyed and the alignment revised in 1932 to reduce the number of switchbacks on the descent into Stevens Canyon from three to one. The new alignment maintained a 6% grade as it descended down the south slope of the canyon. In order to maintain this grade the single 90' radius curve was located below Bench Lake. To accommodate the switchback segment, large retaining walls were added to the fill side of the road, as well as to a turnout to take in the magnificent views of the canyon and Mount Rainier to the northwest. At Sunbeam Creek the span was sufficiently short to enable the construction of a box culvert rather than a bridge. However, Type 1 guardwalls were added atop of the culvert and turnouts were provided on either side, allowing drivers to pull over and admire both the creek and its associated structure.

4C - Stevens Creek to Box Canyon

In Spring 1934, Colonial Building Company began construction on project 4C.1, which included construction of a temporary bridge across Stevens Creek. This section of road which followed the steep east wall of Stevens Canyon required extensive blasting and careful excavation as the removed material was used for fill. Although this segment was on very difficult terrain, the scheduling and the temporary bridge connecting the two segments allowed the contractor to finish the grading of the 4-mile segment by September 1935.

In December of 1939, a contract was let for the first of the three major bridges, Stevens Creek Bridge, to be built on the upper part of Stevens Canyon Highway. Sam Orino of Spokane, WA was awarded the contract for the reinforced concrete spandrel arch bridge. The contractor began work in May 1940, and in just over a year had poured the concrete and added the rustic style stone facing for the bridge including the side walls, paving, curbs and guardwalls (HAER No.WA-123: 8).

Phase 4E - Eastside Highway (HW 123) Junction to Backbone Ridge

In March 1934, construction began on the eastern segment of the road between the Eastside Highway junction and Backbone Ridge. In order to complete the grading, two temporary bridges were constructed over Falls Creek and the Ohanapecosh River (HAER No.WA-123: 6). The contractor for the work was the Sam Orino Company, who finished the clearing and grading for the first 2.3 miles in September 1935. This segment of road rose 900'from the Ohanapecosh River to the ridge at the south end of Backbone Ridge. The clearing work was difficult due to the old growth forest along this segment. But, by the time the grading was completed, the road incorporated five switchbacks that traversed the east side of Backbone Ridge.

The final segment of phase 4E was broken into two units, the first of which (1.6 miles) was contracted to A.C. Greenwood who began work in October 1935. This section of the highway required blasting on the unstable slopes. In order to prevent the blasted material from cascading down the slope, the contractor built a timber grid to catch the stone which was used in the "fill-through" segments of the road. The first segment was completed by November 1936, but 1938 that the second segment was finished. Contracted to Lucich and Company, the 1.32-miles of road grading required major engineering work with the construction of viaducts to traverse the southeast end of Backbone Ridge.

Section 4D - Backbone Ridge to Nickel Creek

The Backbone Ridge to Nickel Creek segment traversed the west side of Backbone Ridge, crossing Nickel Creek in the process. This phase of the project was broken into two units, the first of which (0.69 miles) was contracted to Sam Orino Company who began work in 1938 and completed the work in October 1939. The second unit (2.35 miles) was built by Lucich and Company who started work in April 1940. This segment of the road required blasting and extensive excavation of the steep slopes which was used in the fill-through section of the road. The contract for the work was extended by change order to include additional landscape work including the planting of trees and shrubs to stabilize the cut and fill slopes. Lucich and Company completed their work in August 1941 (HAER No.WA-123: 8).

The last project to be completed before World War II was the reconstructive grading done by Oregon contractor E.L. Cates. Begun in April 1941 the segment near Nickel creek required additional grading work due to the instability of the fill slope. When the work was completed in October 1941, only a 0.5-mile segment of clearing and grading was left outstanding before work on the road was suspended due to the outbreak of WWII.

Completing the Highway: 1941 –1957

With the outbreak of WWII, construction on the final road segment between Nickel Creek and Box Canyon was put on hold until 1950. In addition, the remaining projects required to complete the highway did not fit into the original five phases and where treated as separate contracts. They included four bridges, the tunnel at Box Canyon, as well as numerous viaducts. The contracts were grouped according to geographic location. The first contract called for the construction of two bridges in the rustic style over the Muddy Fork Cowlitz River and Nickel Creek. In May 1950, the contract for the Box Canyon Muddy Fork Bridge and Nickel Creek Bridge was awarded to the Seattle firm of Hawkins and Armstrong. In addition, Hawkins and Armstrong were awarded one of two contracts to complete the grading on the road in this segment which had deteriorated during the nine year pause in construction. After the grading was completed they set up a camp at Nickel Creek and immediately began work on the Box Canyon Muddy Fork Bridge and Nickel Creek Bridge. The reinforced concrete arches were faced with massive stones in the rustic style. The Box Canyon Muddy Fork Bridge took the longest to build due to a span over the canyon that required a concrete spandrel arch over 180' in length.

The contract for the Box Canyon Tunnel was awarded to the Portland firm of J.H. and W.J. Conley who had earlier been awarded the second of the two contracts to repair grading on the west side of Box Canyon. Initial design specifications called for a concrete lining, but after an inspection of the structure it was decided that the exposed rock was sufficiently stable and did not require a lining. The exposed rock was crafted to hide drill scars and ensure that the strata followed the natural alignment of the surrounding rock surfaces. Work on the 160' tunnel was completed in September 1952. While work was underway on the bridge and tunnel projects, Fred H. Slate Company won the contract to construct the viaducts. The reinforced concrete viaducts were edged with NPS standard type stone guardwalls and the contractor completed the work by the fall of 1952.

In 1955, the contract for the last two bridges on the Stevens Canyon Highway, the Falls Creek Bridge and the Ohanapecosh River Bridge, was awarded to the Seattle firm Wayne Construction Company. The bridges marked the east end of the highway and were constructed with cast-in-place reinforced concrete. Despite initial plans which called for rustic-style stone facing, the exposed concrete was left in place and steel safety railings were added to both structures giving these bridges a more modern appearance. With the major structures nearing completion, a contract for the paving of the highway was awarded to J.A. Terteling and Sons, Inc. The contract included additional grading work to repair slumps on the fill side of the road. After repairs were completed the contractor laid gravel and paved the entire highway with bituminous asphalt. The formal ceremony marking the opening of the Stevens Canyon Highway was held at Box Canyon Muddy Fork Bridge on September 4, 1957.

Maintaining Stevens Canyon Highway: 1958 - 2004

With the completion of Stevens Canyon Highway the park finally had a direct vehicular route between Paradise and Sunrise. The improved access increased the efficiency of administrative and maintenance functions and provided a scenic ride for visitors between major park destinations, as well as points along the road including Box Canyon, Reflection Lakes, and the Grove of the Patriarchs. Although the route necessitated large rock cuts resulting in significant scarring of the landscape, any alternative would likely have resulted in more damage to the park landscape. By employing a series of rock cuts, tunnels, bridges, rock guardwalls, and viaducts, the BPR engineers and NPS landscape architects were able to minimize the impact of the road on the landscape.

In March 1956, Secretary of the Interior Douglas McKay announced that the Mission 66 program would include $66 million over the ensuing ten years for comprehensive development and improvements at Mount Rainier (DOI Press Release, Catton files, March 16, 1956). The Mission 66 program was designed to provide interpretative displays, campgrounds, picnic areas, trails, roads, public use buildings and other facilities needed to facilitate the anticipated 1,000,000 annual visitors expected at parks nationwide by 1966. At that time, 92% of all visitors did not stay overnight and, of those who did, 66% were campers (MORA Archives Pam.979.77, 1956).

Paradise was the primary destination for visitors at Mount Rainier and the area was beginning suffer the effects of overcrowding. Through Mission 66 funding, the park planned to add additional facilities and amenities throughout the park, dispersing visitor impacts at Paradise and increasing the overall visitor capacity at Mount Rainier. As part of this solution, Stevens Canyon Highway was viewed as a potential site for improved interpretation of the natural features in discrete developed areas along the highway. These developed areas ranged from large turnouts, such as Inspiration Point, to the addition of comfort stations and an exhibit shelter at Box Canyon. In addition, by employing well-spaced picnic areas, turnouts at scenic interest points, and short trails to nearby natural features, the highway would become a destination in itself, further reducing visitor overcrowding at popular park features. Furthermore, the entire route was expected to receive an interpretive overlay, with roadside exhibits, markers, and informational signage. The park planned for a trip around the mountain that was a continuous experience with the visitor able to view, understand, and appreciate the history and ecology of the park at the major developed areas and turnouts along the highway (Memo to staff members from Superintendent, August 31, 1956).

Inspiration Point had been a critical road junction and viewing area since the Government Road to Paradise was constructed in 1910. The site provided a unique opportunity to view Mount Rainier, Stevens Canyon, and numerous waterfalls from a panoramic overlook. However, a series of rock slides during 1920s forced the Park to construct a one lane path, named the Narada Cut-off, in August 1922, to maintain access through this area while repair work was ongoing. The new segment of road was used for downhill traffic, while uphill traffic continued to use the switchback section until 1926. Eventually, the switchbacks rising above Narada Falls to Inspiration Point were abandoned and the Narada cut-off was widened to accept two way traffic. In 1958, heavy traffic prompted the Park to construct a new roadway to Paradise from Frog Heaven near Narada Falls. The construction of this segment marks the completion of the current

road alignment, but it remains unclear when the branch to Paradise was abandoned at Inspiration Point. Historic images of Inspiration Point taken when Stevens Canyon opened in 1957 suggest there was access to Paradise at that time, but this section may have been abandoned during construction of the loop in the late 1950s.

In 1955, the Branch of Landscape Architecture at the NPS Western Division, prepared plans for interpretive facilities and directional signage to be placed at Inspiration Point, as well as the Quarry Overlook, Box Canyon, and Backbone Ridge. The Mission 66 design for Inspiration Point called for a wye intersection with a historic style turn-out, median, and interpretive plaque. However, the final Mission 66 design settled on a less intrusive design with a smaller turnout, median strip and a interpretative wayside exhibit.

The Box Canyon tunnel, bridge, turnout, and trail were completed in 1952 as part of the post-WWII construction of Stevens Canyon Highway. In the years 1953 thru 1955, Mission 66 plans were developed and revised, which called for a pedestrian trail and overlook on the north side of the road, while a comfort station, observation platform, and interpretive exhibit would be located on the south side (MORA Archives 1955-56). Box Canyon was conceived as a prominent turnout, where visitors could obtain general information, as well as learn about the geology and history of the area. By 1956, final revisions were complete for the interpretive exhibit shelter, comfort station, and trail alignment, fencing and the construction was completed by the end of the 1950s.

The Backbone Ridge area was purchased from the U.S. Forest Service in the early 1930s. Travelers heading west from Ohanapecosh were able to get their first wide-angle view of Mount Rainier as they rounded the southern end of Backbone Ridge and the popularity of this view is the likely cause of consecutive expansions of the site. During the Mission 66 era the turnout was expanded to hold up to fifteen vehicles with an overlook which included a guardwall and an interpretive plaque. The rock barrier associated with the Backbone Ridge turnout was removed and replaced with a stone pilaster and wood guardrail structure. The last major Mission 66 development on Stevens Canyon highway was at the intersection with Eastside Highway. Prior to Mission 66, the junction was designed as a wye intersection. By 1964, this area had been redesigned with a large planted island between the travel lanes and the construction of a new Mission 66 style entrance station.

As early as 1959, large sections of Stevens Canyon Highway succumbed to heavy rains and storm damage that temporarily closed the roadway. Further flooding in November 1962 also caused portions of the highway to buckle and wash down the fills slopes into Stevens Canyon. In 1972, Mount Rainier received a record snowfall of 1,122" at Paradise. The weight of the snow damaged roads throughout the park including several locations on Stevens Canyon Highway. In particular, the rock wall at Backbone Ridge washed out and the walls below the upper tunnel and at Inspiration Point slumped and buckled (HAER No. WA-123, p. 10). Repair work on the elevated viaduct at Backbone Ridge involved installation of freeway-style turnpikes on either side of an extant historic section of viaduct.

In 1997, Stevens Canyon highway was included in the National Historic Landmark District (NHLD) designation for Mount Rainier National Park. The NHLD nomination noted the

centerline of the road still follows the original alignment and the majority of the historic structures had been retained. The nomination stated "the road can be said to have excellent integrity to the period of significance" (NHLD Nomination, Carr: 9). This report also recommended that the Stevens Canyon Tunnel and Box Canyon Tunnel be added to the List of Classified Structures for the park, and that they be nominated for the National Register of Historic Places.

Figures for Physical History

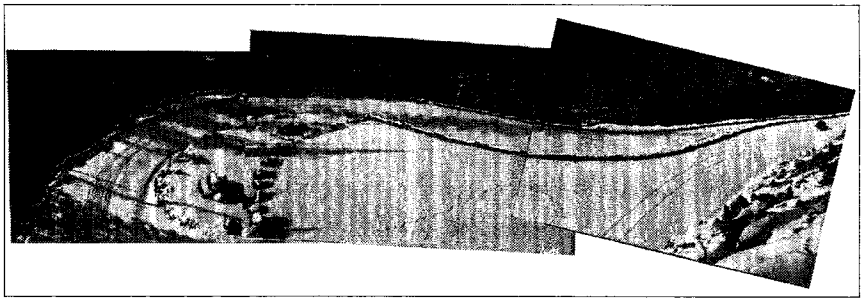


Figure 2.1. Historic photo showing Inspiration Point, 1930 (Mount Rainier National Park Archive, hereafter MORA Archive).

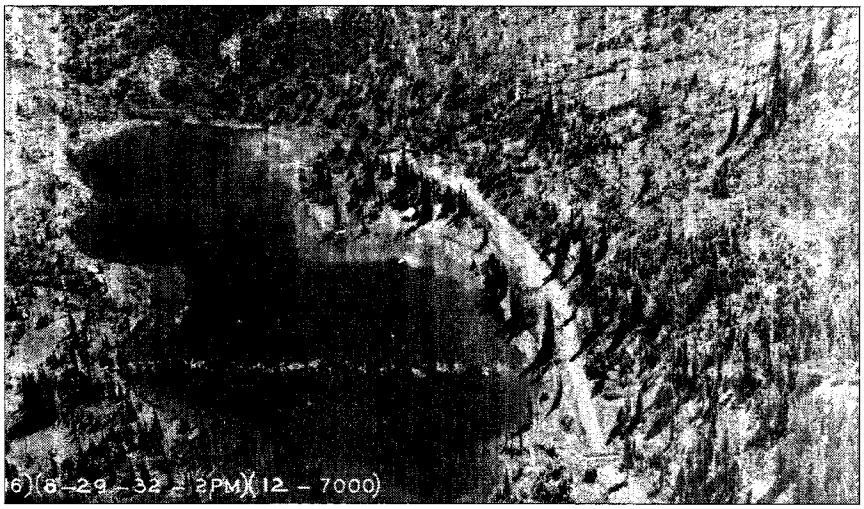


Figure 2.2. Historic photo showing road terminating on the south side of Reflection Lakes, 1932 (MORA Archive).

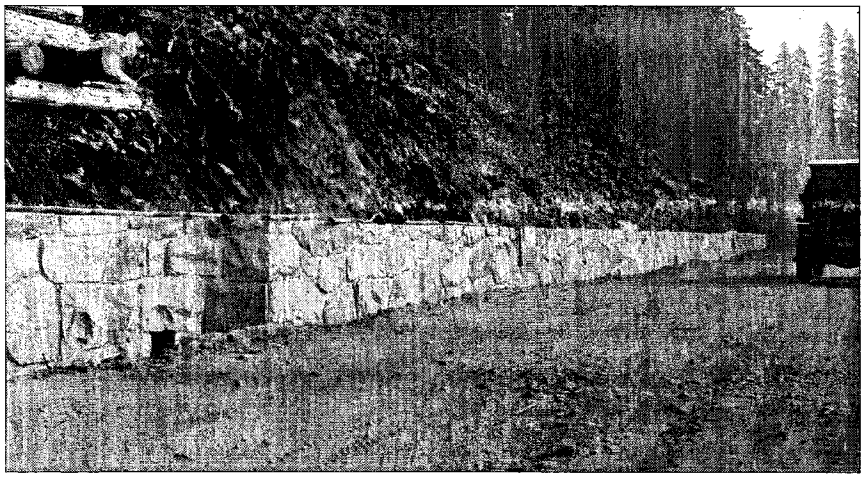


Figure 2.3. Historic photo showing retaining wall near Inspiration Point, 1930 (MORA Archive).

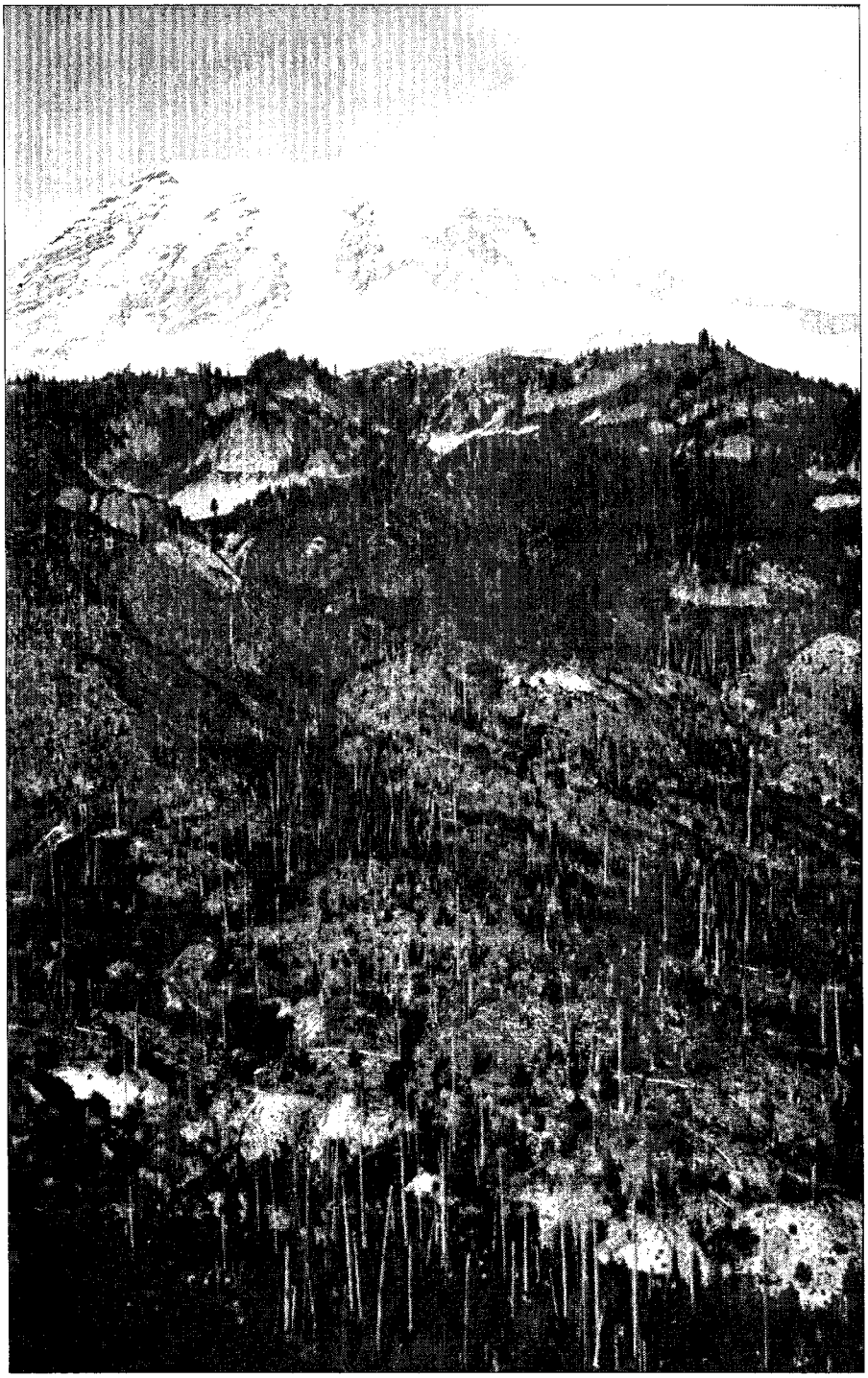


Figure 2.4. Historic photo showing west end of Stevens Canyon down towards Stevens Creek, 1930 (MORA Archive).

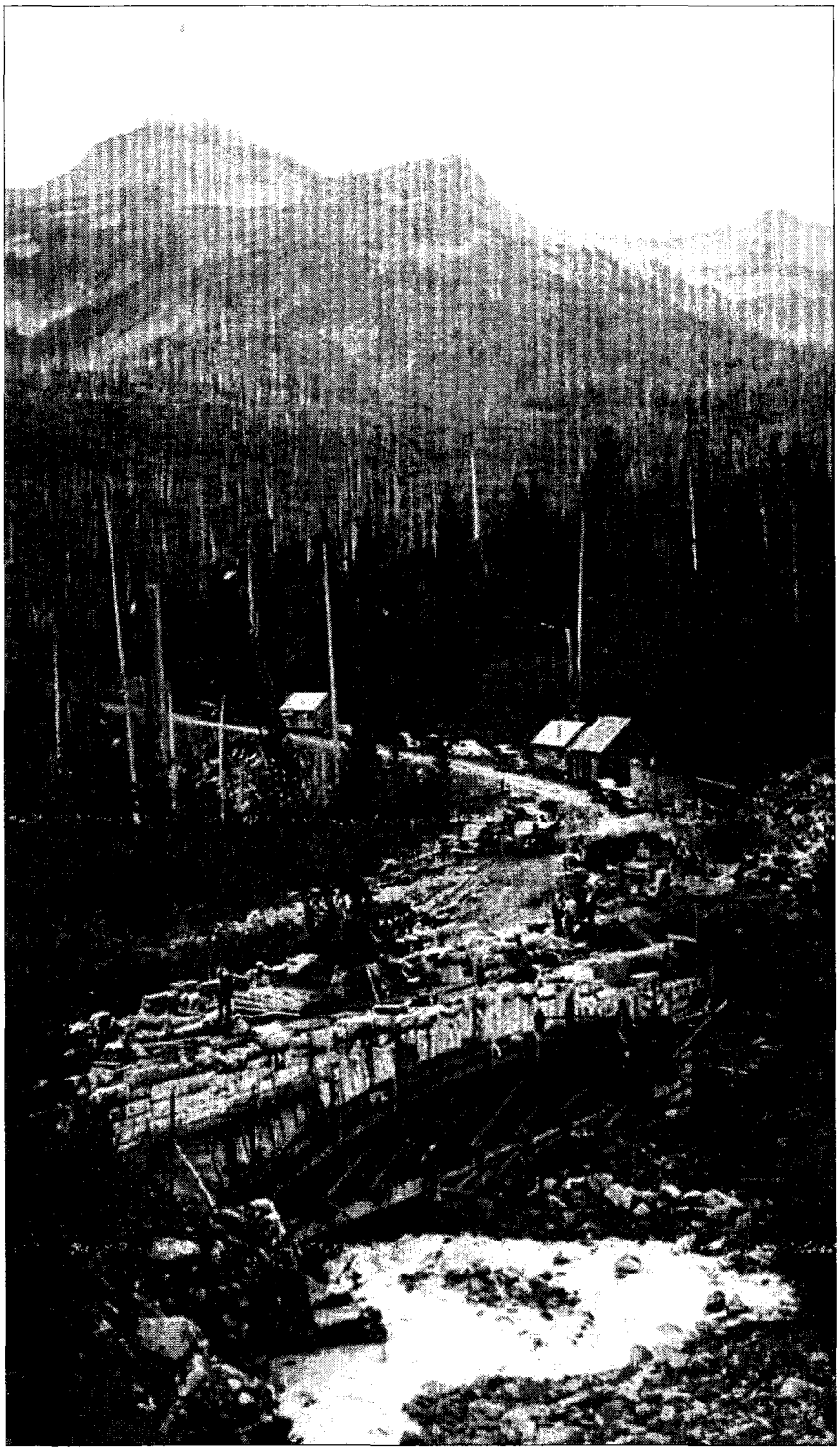


Figure 2.5. Historic photo showing Stevens Creek Bridge under construction and construction camp, c.1940 (MORA Archive).

Figure 2.6. Historic photo showing construction of hand-laid rip rap on fill slope of Stevens Canyon, 1940 (MORA Archive).

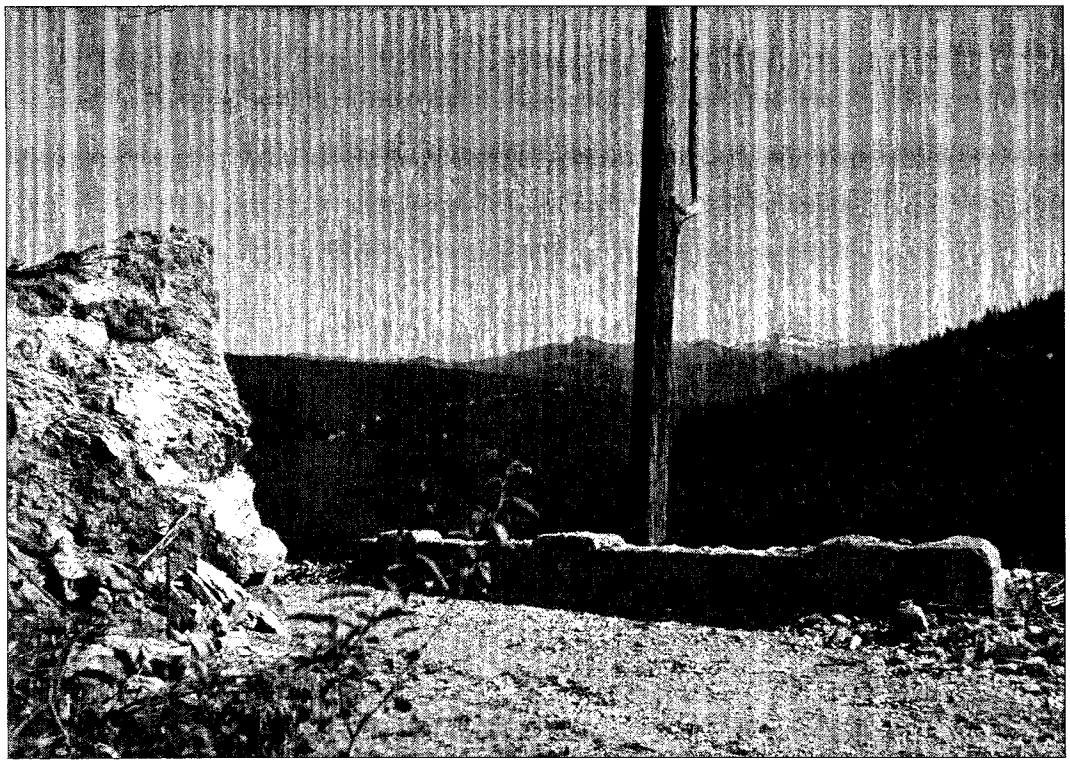


Figure 2.7. Historic photo showing construction of Type 2 guardwall and retention of snag tree on fill slope in Stevens Canyon, 1940 (MORA Archive).

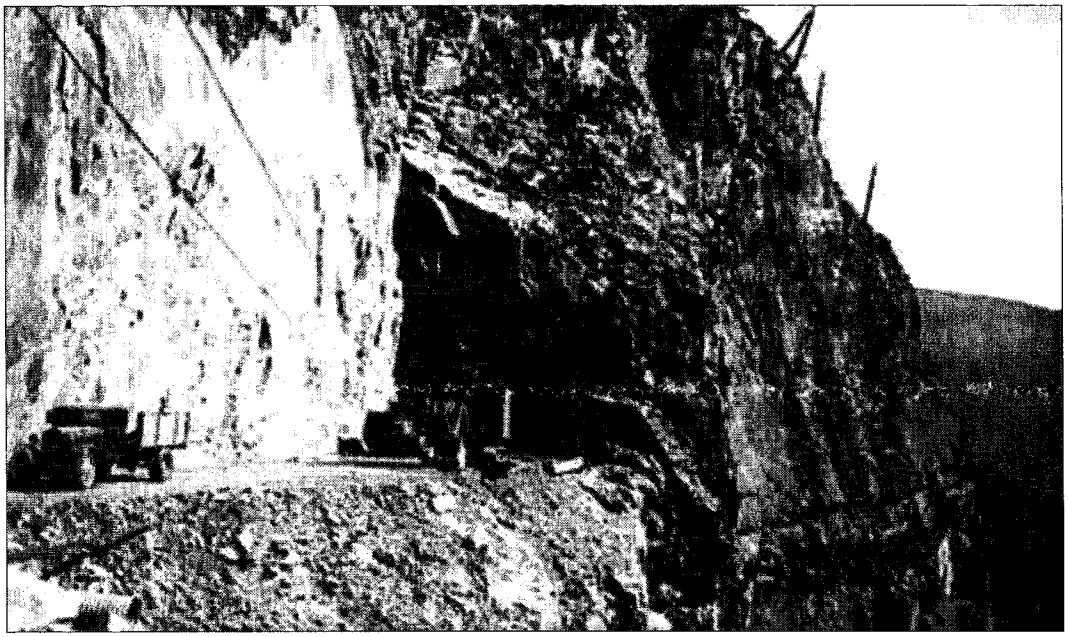


Figure 2.8. Historic photo showing Stevens Canyon Tunnel under construction, c.1938 (MORA Archive).

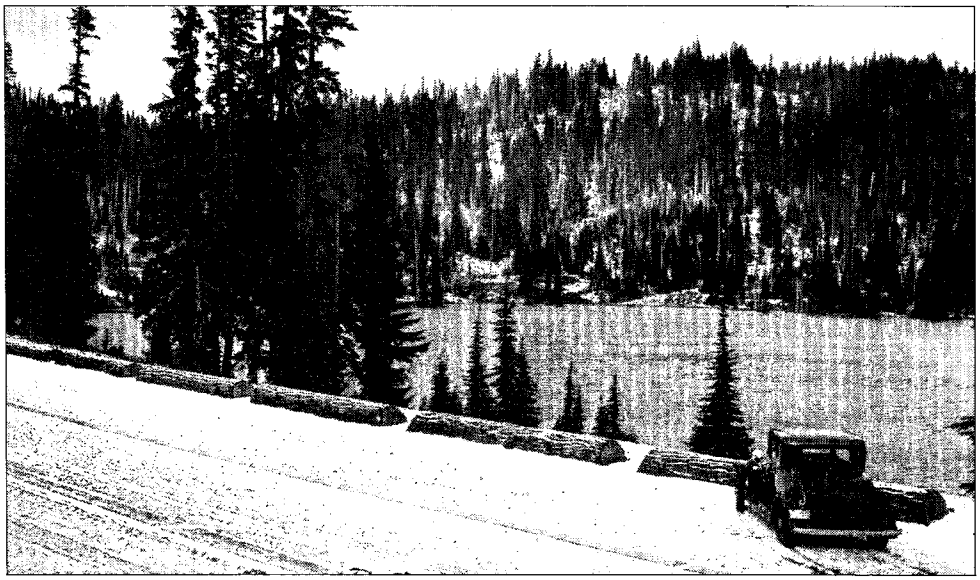


Figure 2.9. Historic photo showing turnout with bumper stops at Reflection Lakes, c. 1940 (MORA Archive).

Figure 2.10. Historic photo showing a discrete, lens-shaped turnout at Backbone Ridge with rock barriers, c.1940 (MORA Archive).

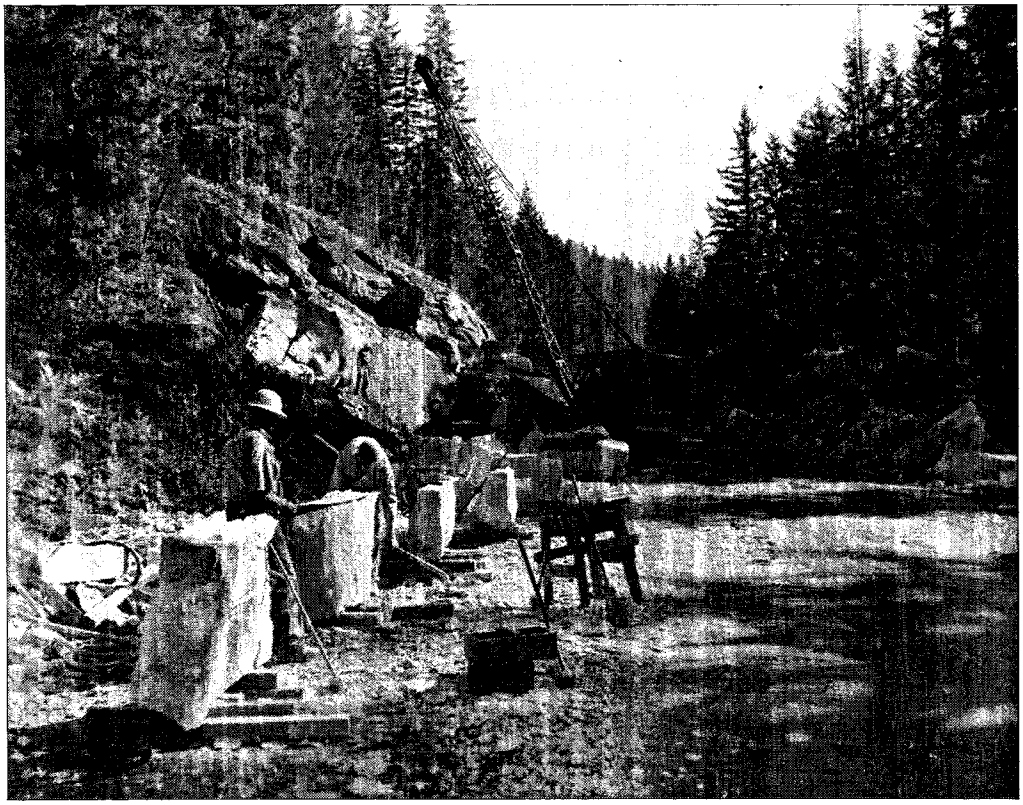


Figure 2.11. Historic photo showing contractors with crane working salvaged stone from adjacent rock cut, c.1940 (MORA Archive).

Figure 2.12. Historic photo showing Type 2 guardwall at inspiration point, c.1940 (MORA Archive).

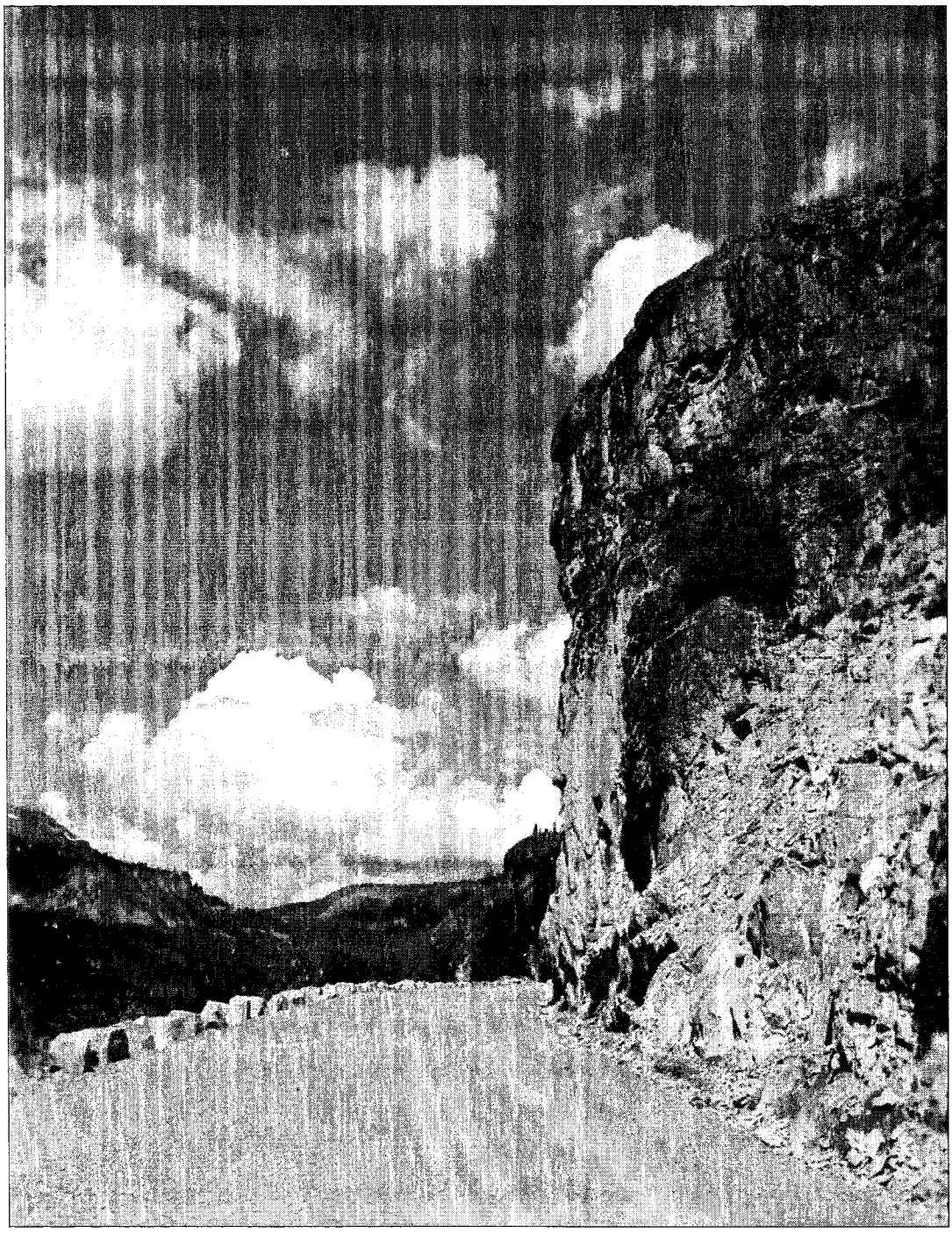


Figure 2.13. Historic photo rock barrier with inside ditch, c.1952 (MORA Archive).

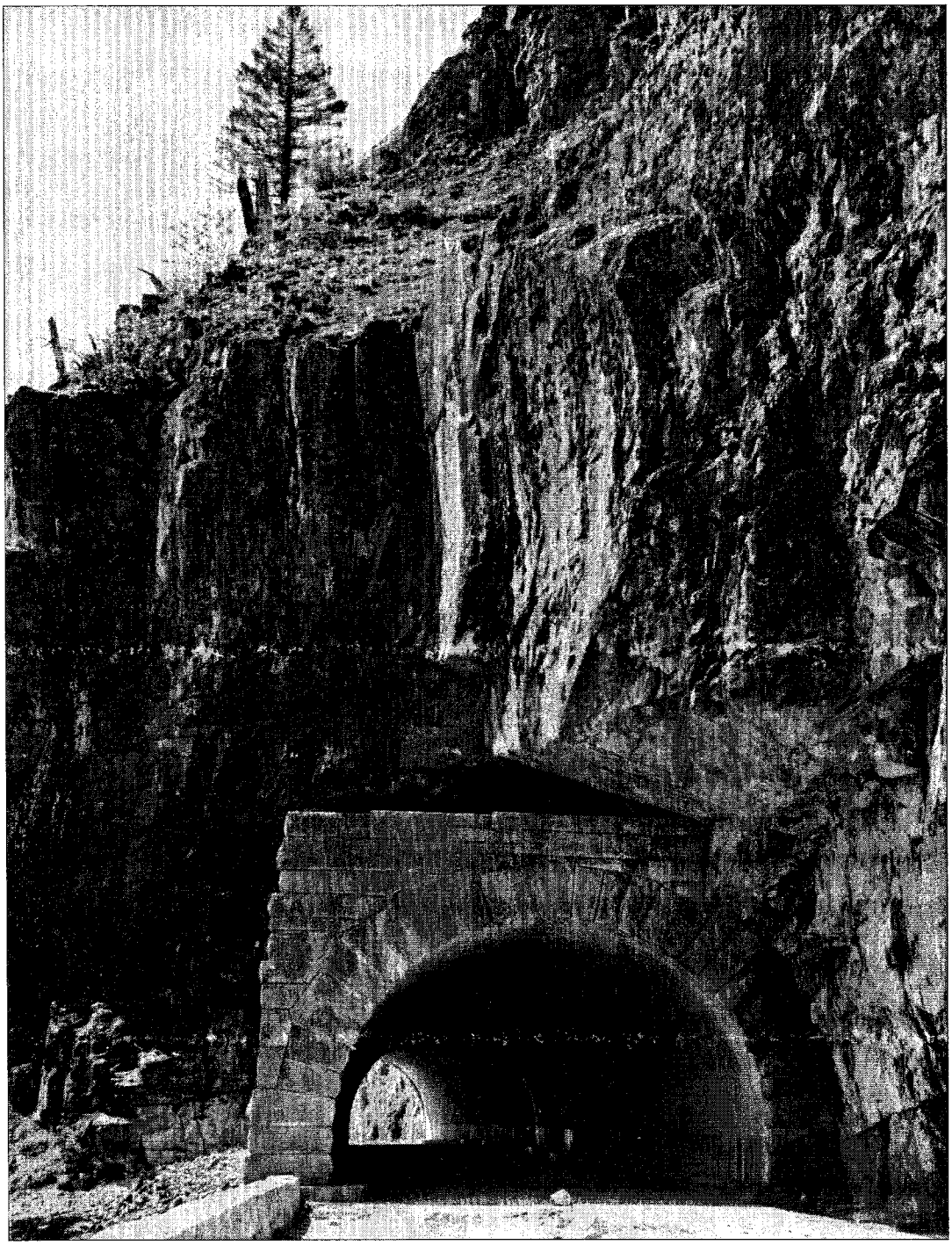


Figure 2.14. Historic photo Stevens Canyon Tunnel with ashler stone portal and concrete lining, 1950 (MORA Archive).

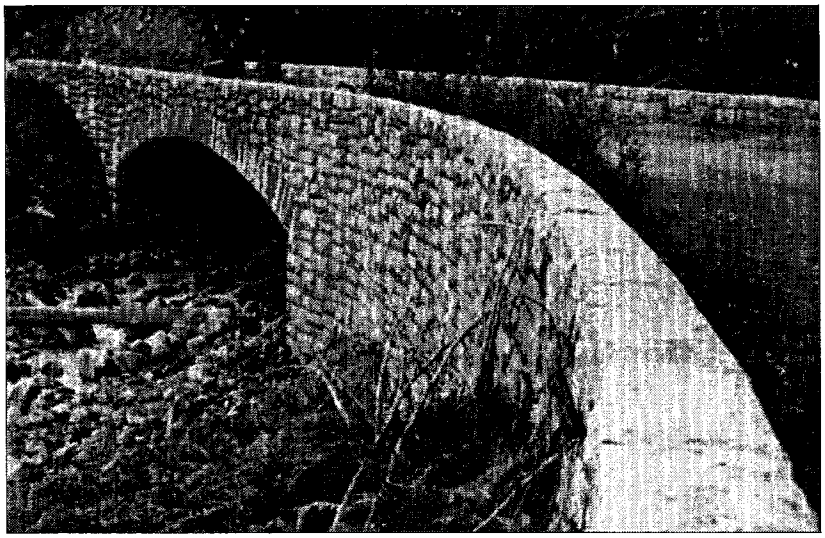


Figure 2.15. Historic photo showing Stevens Canyon Bridge with revegetating bridge deck, after period of neglect during WWII, 1952 (MORA Archive).

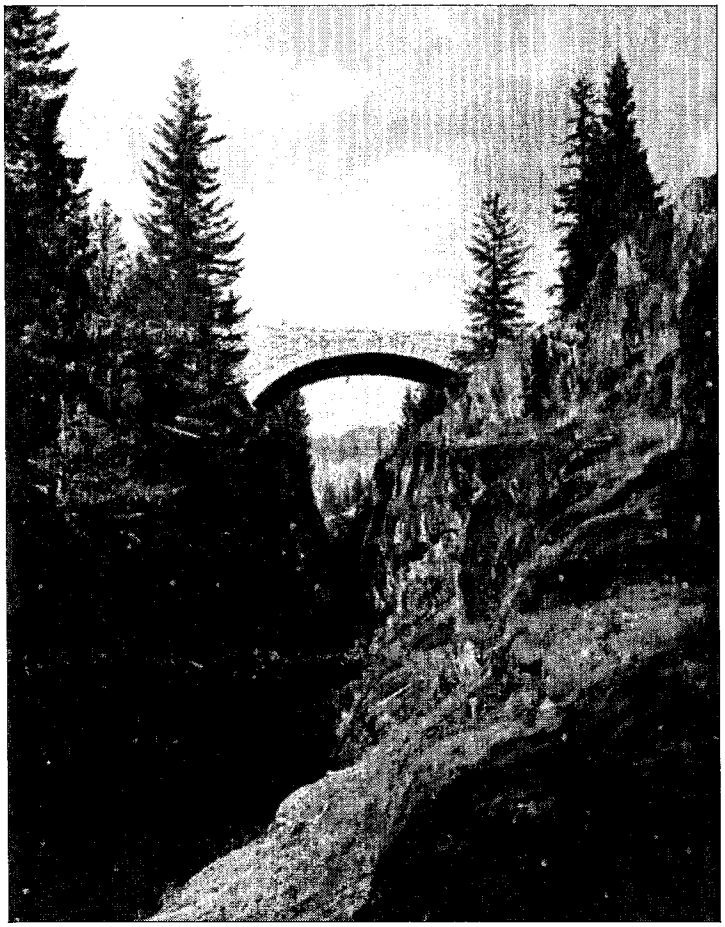


Figure 2.16. Historic photo showing Box Canyon Muddy Fork Bridge, 1963 (MORA Archive).

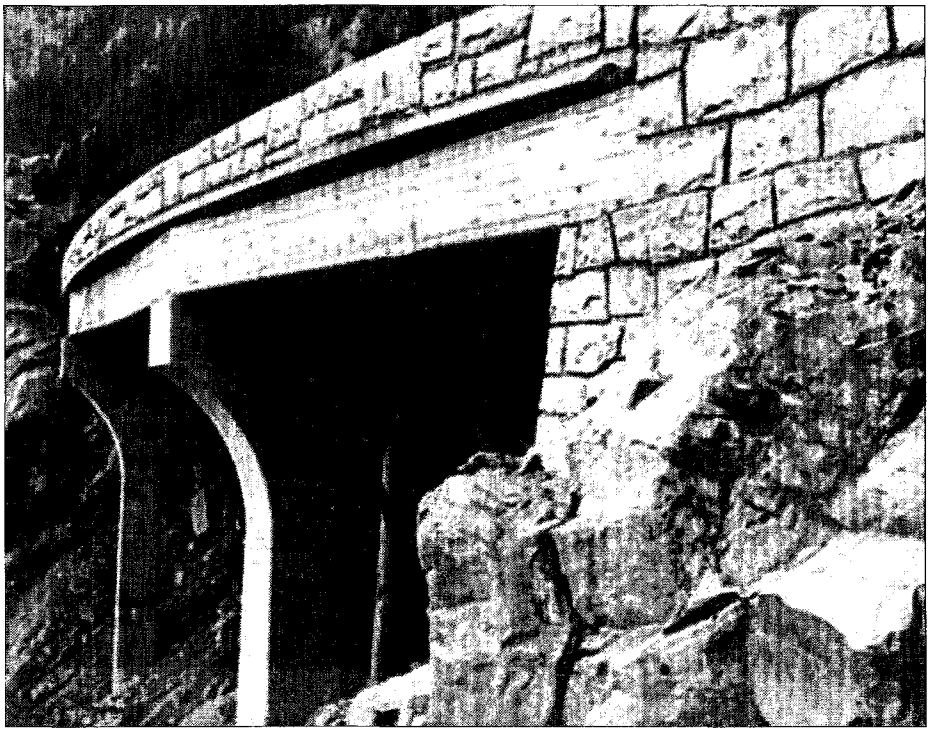


Figure 2.17. Historic photo showing viaduct along Backbone Ridge with visible parts of the deck faced with stone, 1952 (MORA Archive).

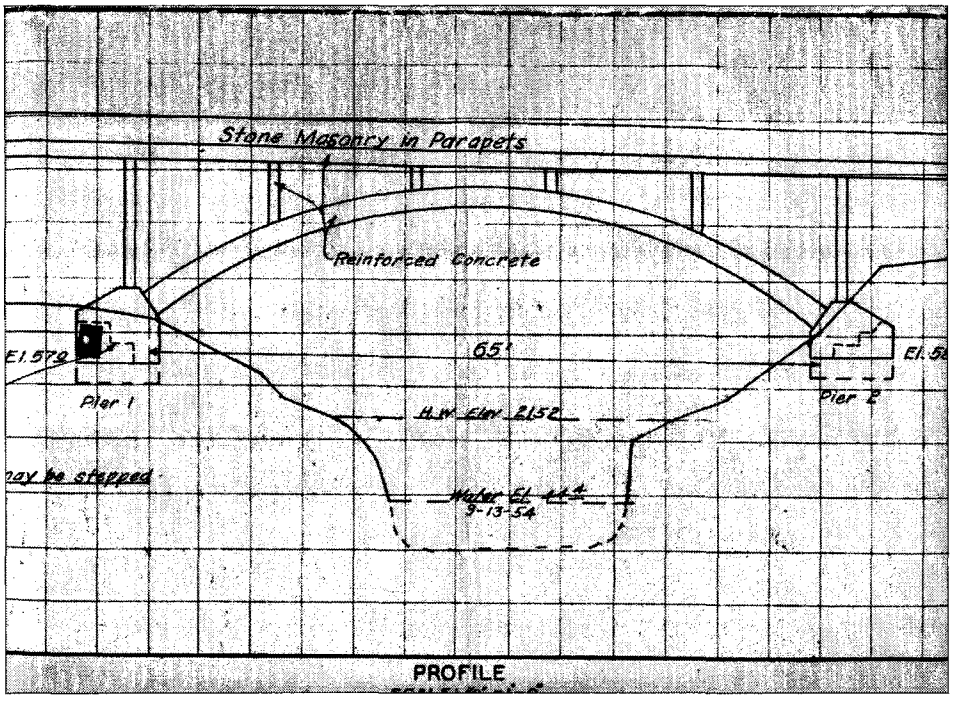


Figure 2.18. Historic photo showing plan for Ohanapecosh River Ridge indicating arched bridge with stone masonry to match the other rustic bridges, 1952 (MORA Archive).

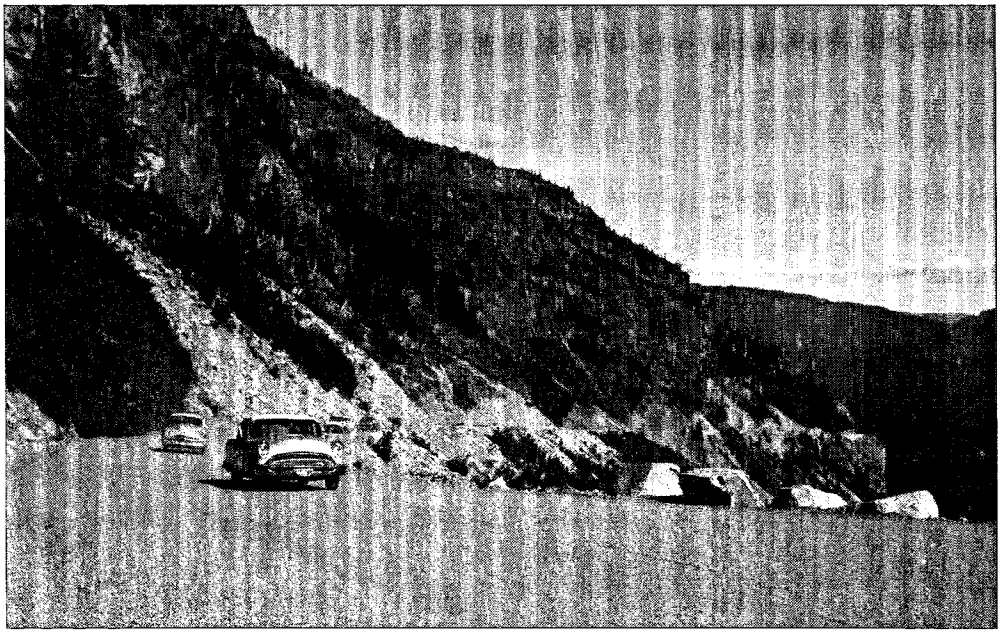


Figure 2.19. Historic photo showing view east through Stevens Canyon with rock barriers for edge delineation, 1957 (MORA Archive).

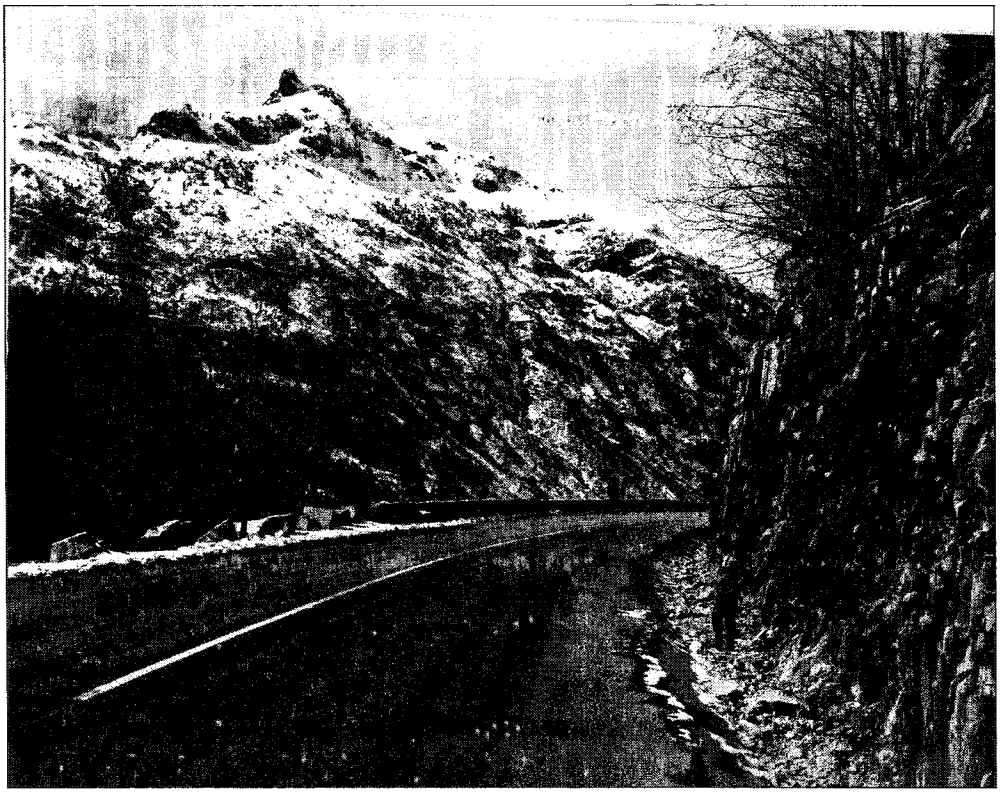


Figure 2.20. Historic photo showing plan view of Stevens Canyon with rock barriers leading to Type 1 guardwall, and ditch on the inside at base of rock cut, 1963 (MORA Archive).

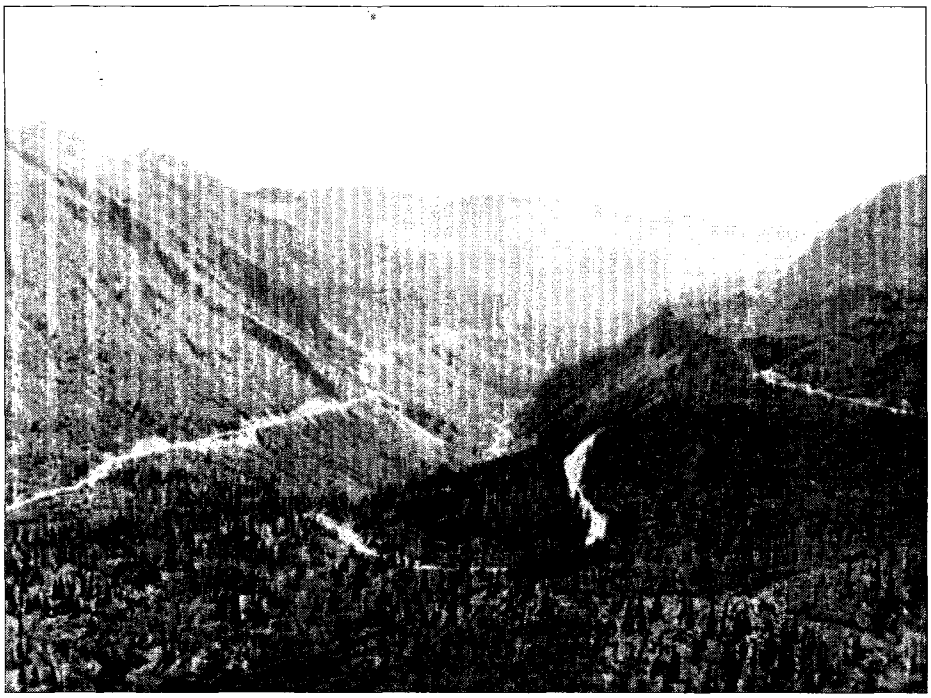


Figure 2.21. Historic photo showing road alignment from Bench Lake area down through Stevens Canyon, 1957 (MORA Archive).

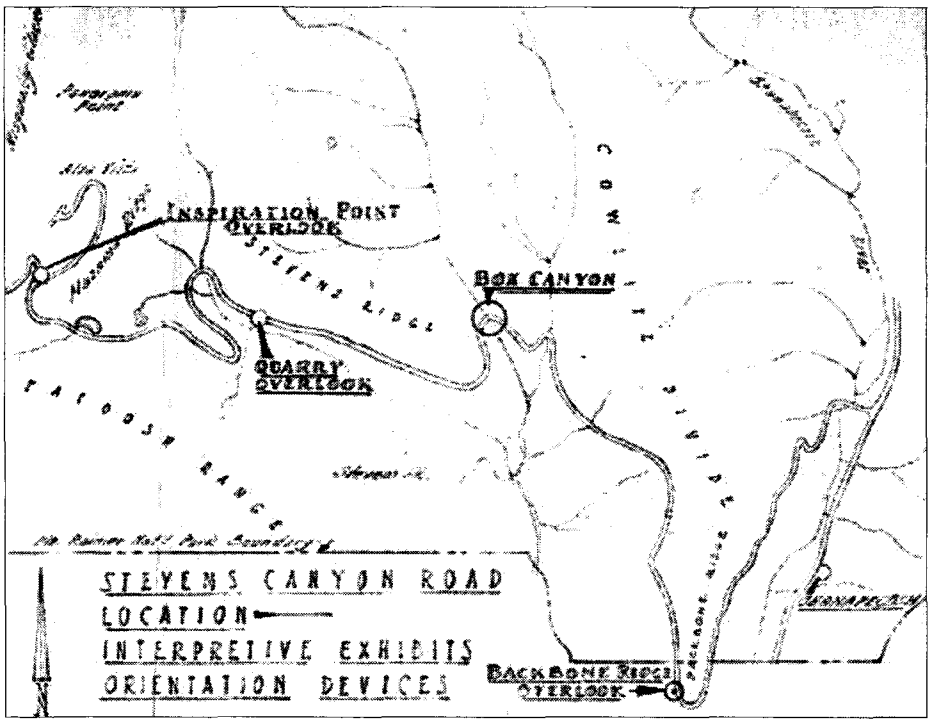


Figure 2.22. Historic plan showing location of proposed interpretive exhibits indicating the influence of Mission 66 planning, 1955 (MORA Archive).

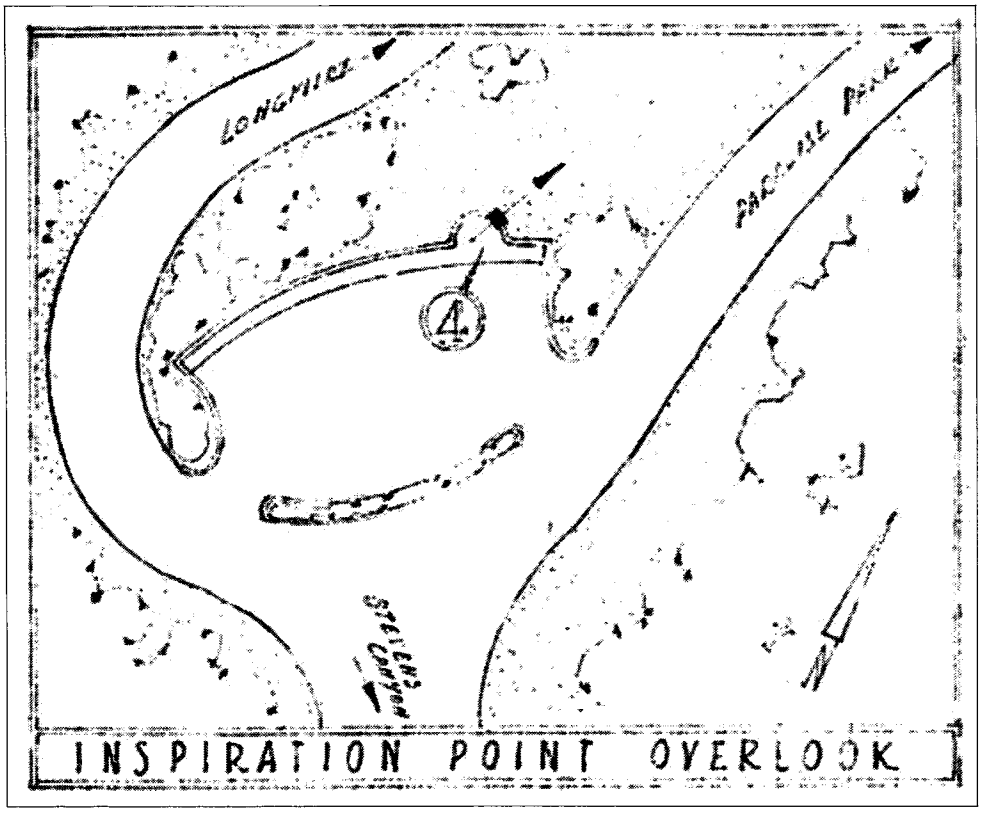


Figure 2.23. Historic plan showing proposal for Inspiration Point with Paradise Park road (Valley Road) providing access to Paradise and the turnout located on the cut side of Stevens Canyon road, 1955 (MORA Archive).

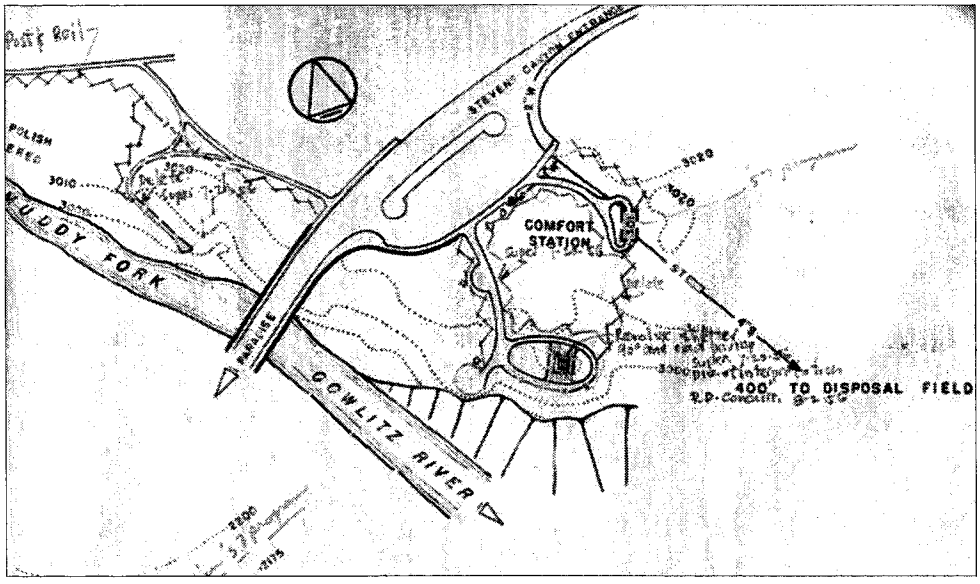


Figure 2.24. Historic plan showing proposal for Box Canyon including turnout with plant island median, comfort station, exhibit shelter and viewing overlook, 1955 (MORA Archive).

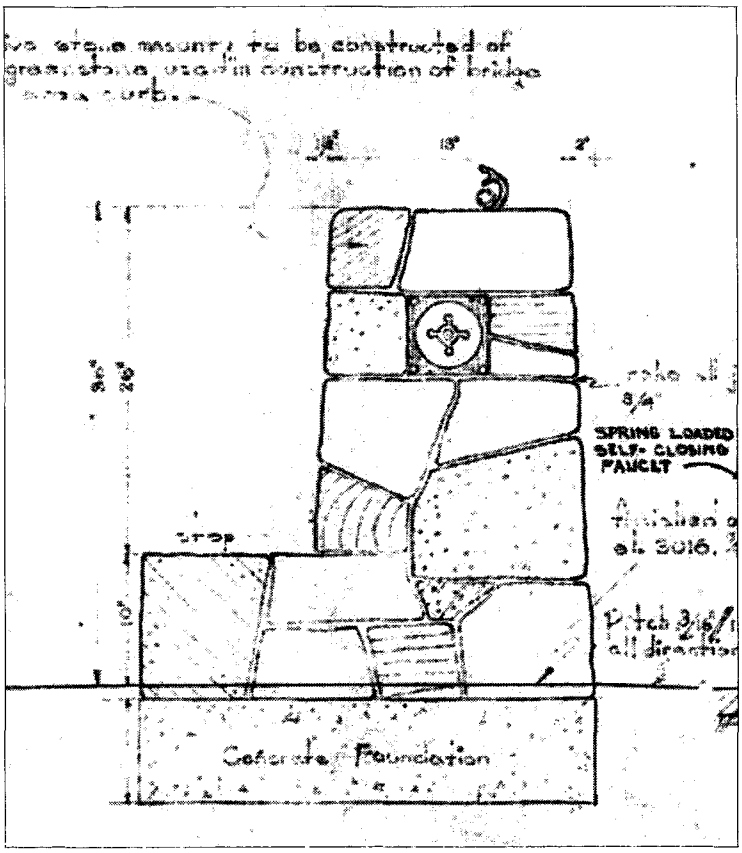


Figure 2.25. Historic plan showing rustic-style design for drinking fountain at Box Canyon, 1959 (MORA Archive).

Figure 2.26. Historic photo showing Backbone Ridge turnout with rock barriers and overlook, 1959 (MORA Archive).

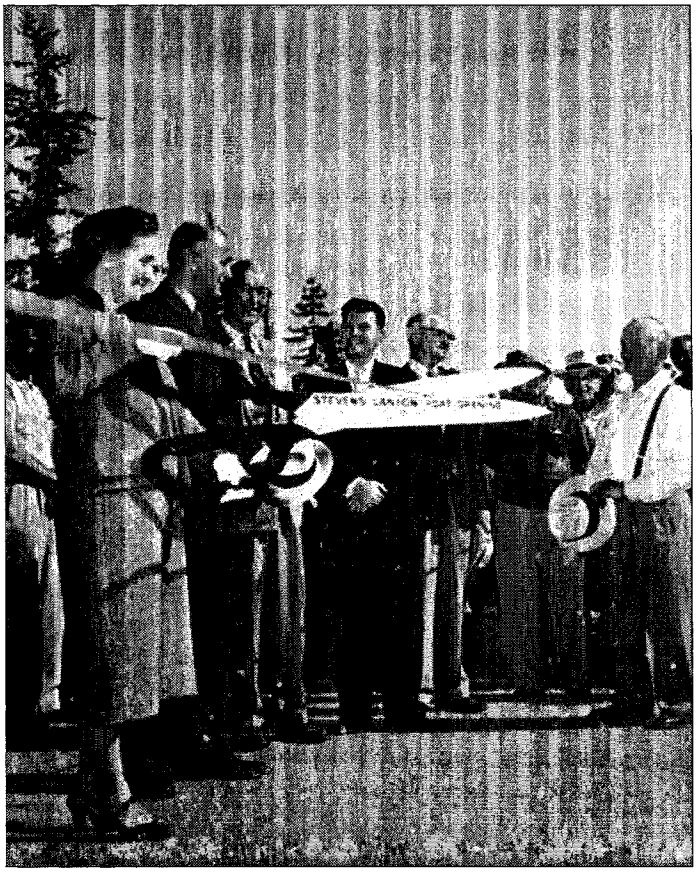


Figure 2.27. Historic photo showing ribbon cutting ceremony at the official opening of Stevens Canyon Highway, 1957 (MORA Archive).

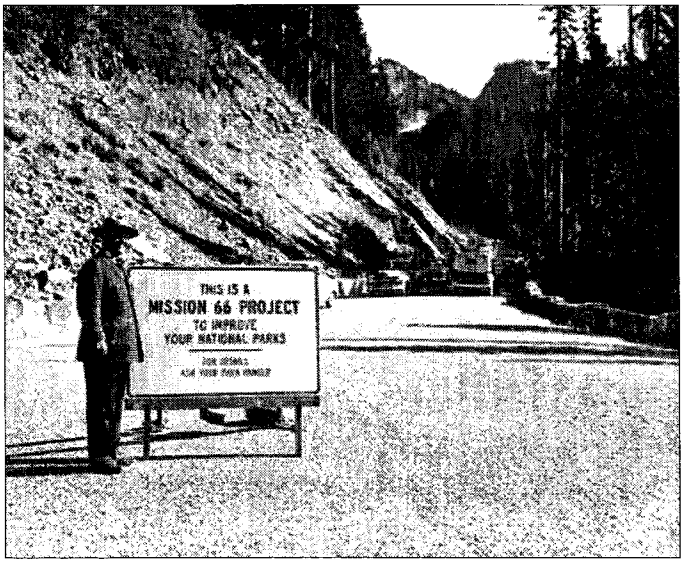


Figure 2.28. Historic photo showing Inspiration Point looking east on opening day, 1957 (MORA Archive).

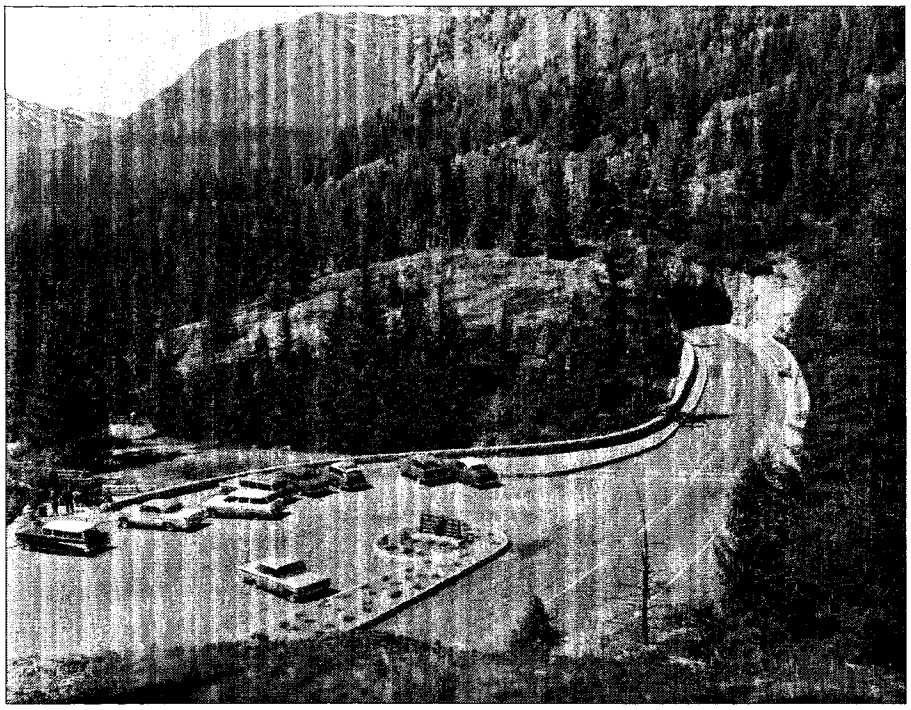


Figure 2.29. Historic image showing Box Canyon developed area. Note the sign in the island, the Type 1 stone guardwall, sidewalks, and stone curbs, the split rail worm fence and viewing overlook, 1963 (MORA Archive).

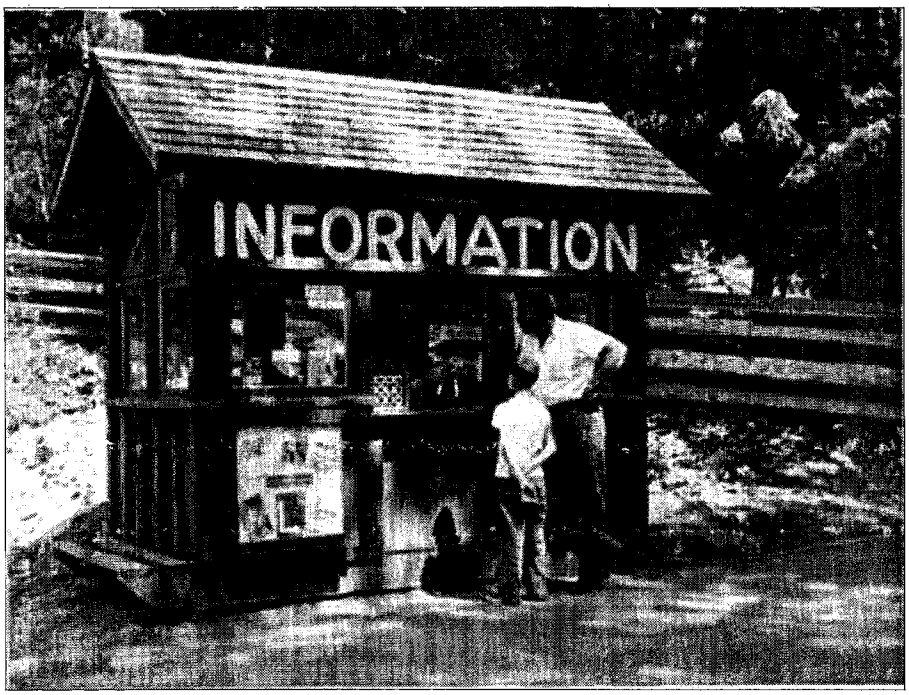


Figure 2.30. Historic photo showing Box Canyon information booth that was part of the Mission 66 interpretative program, 1959 (MORA Archive).

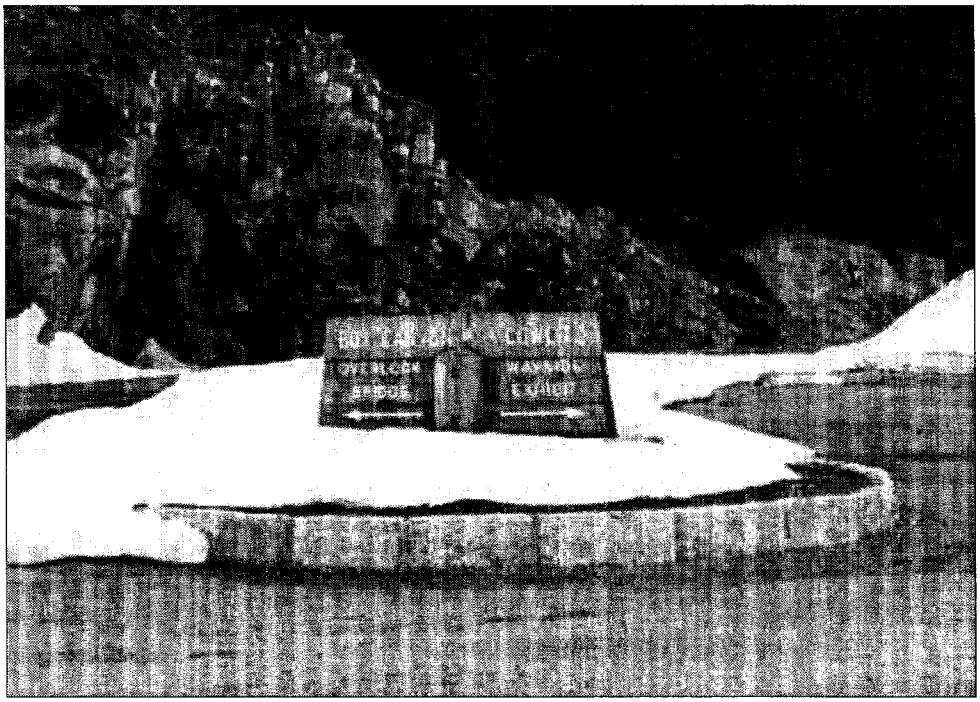


Figure 2.31. Historic photo showing directional sign in island bed at Box Canyon, 1959 (MORA Archive).

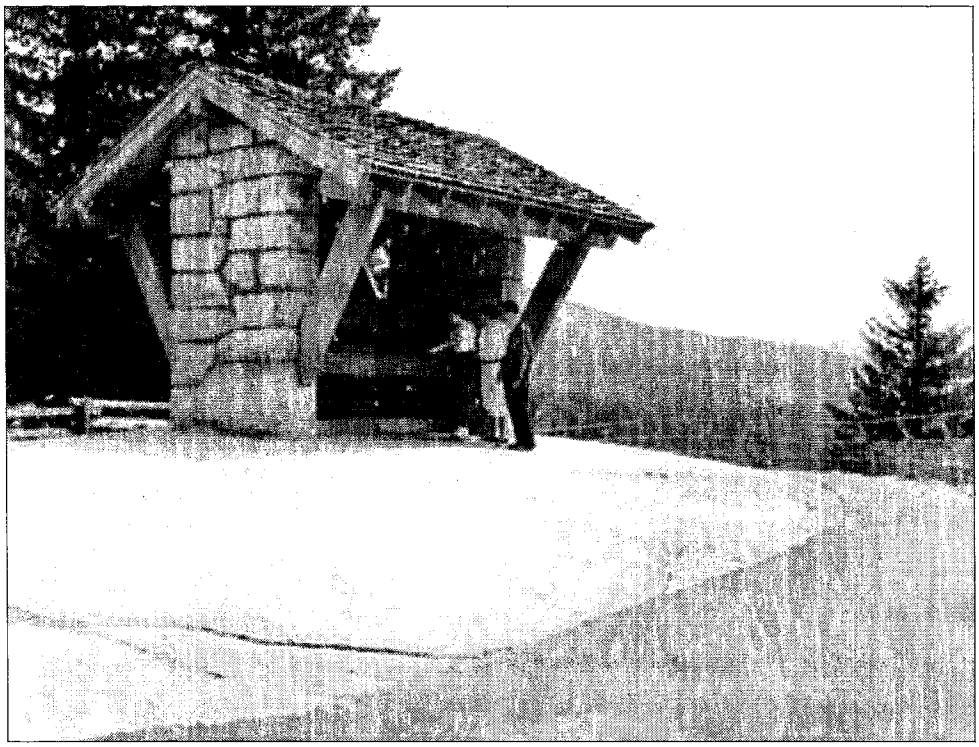


Figure 2.32. Historic photo showing exhibit shelter at Box Canyon with rustic and modern design elements, 1960 (MORA Archive).

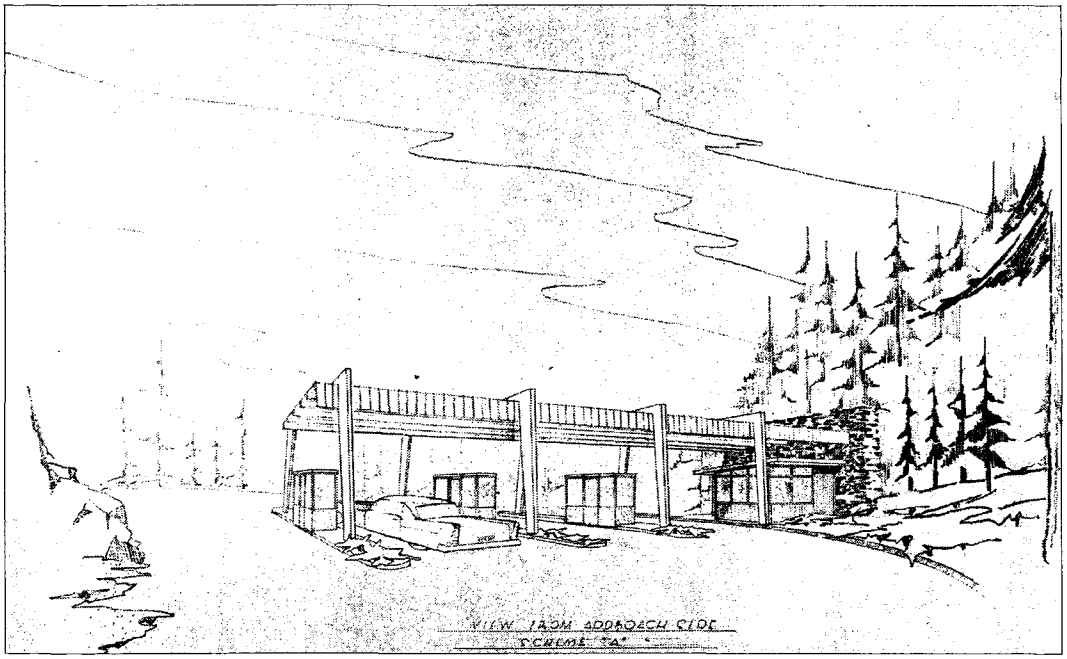


Figure 2.33. Historic photo showing proposed Stevens Canyon entrance station not actually built, 1956 (MORA Archive).

Figure 2.34. Historic photo showing Stevens Canyon entrance station under construction, 1963 (MORA Archive).

Part 3

Analysis and Evaluation

Summary

Stevens Canyon Highway retains integrity in the following landscape characteristics: natural systems and features, spatial organization, land use, topography, vegetation, circulation, buildings and structures, views and vistas, and small scale features. These landscape characteristics and their associated features still convey the physical character of the road as it was designed and constructed between 1931 and 1957.

The Stevens Canyon Highway is a significant example of a scenic highway within the national park system from the rustic design period. In addition, it is also significant as a contributing structure within the National Historic Landmark District (NHLD) for Mount Rainier. The NHLD designation defines the road boundary as a 60' wide corridor along the length of the entire road, 30' from the centerline in either direction. Research indicates that the cross section, including associated features, actually spans up to 100' from either side of the centerline. Therefore, the landscape characteristics identified in this section of the inventory include features located within a 200'corridor along Stevens Canyon Highway. After a description of each landscape characteristic, the associated features are listed. The features are identified by name and the location is noted in miles, from milepoint (MP) 0.0 at the west end of the road where it intersects with the Nisqually Road. The end point is at the Stevens Canyon entrance station where the road intersects with the Eastside Highway, MP 18.998.

Landscape Characteristics and Features

1. Spatial Organization

The spatial organization of the Stevens Canyon Highway is best understood as the way in which the road interacts with its immediate environment. The highway is an integrated design that includes physical features and experiential attributes which are organized into a sequential experience. The NPS landscape engineers determined the road alignment and road character would follow the naturalistic style of landscape engineering. The naturalistic style was incorporated into a holistic design for the highway that include the blending of structures with natural features (meeting the circulation needs of the park), providing destination and viewing points for visitors, as well as interpreting outstanding natural features. The design intent survives today and is still evident in the character of the road. The character of Stevens Canyon Highway can be divided into four distinct segments that reflect the designed progression and transitions during the course of travel along the roadway. These four distinct segments have existed since the road was completed.

Subalpine Segment: MP 0.0 - 3.5

The subalpine segment of Stevens Canyon Highway begins at the intersection with the Nisqually Road and ends one mile east of Lake Louise. This segment of the road encompasses two significant nodes of development; Inspiration Point and Reflection Lakes. Inspiration Point is a turnout and viewing area above Narada Falls which offers a panoramic view of Mount Rainier, the western portion of the Tatoosh Range and the Paradise River. Reflection Lakes is a vehicular destination which provides visitors with access to subalpine nature trails and viewpoints across the lakes to Mount Rainier. The horizontal alignment of the road is organized into a series of tangential curves which provide the visitor with views of rolling meadows and glaciated peaks throughout the subalpine landscape. The vertical alignment of this segment responds to the undulating natural topography with grades ranging between one and four percent. This combination of gentle tangential curves and minor changes in elevation provide the visitor with a continually changing progression of landscape sequences. In response to the diverse and spectacular views afforded by the combination of road alignment and subalpine vegetation, numerous turnouts exist, providing drivers with many opportunities to pull off the road and appreciate the surrounding mountain peaks and valleys.

Stevens Canyon Segment: MP 3.5 - 8.0

This open segment of road begins with a rapid descent down the south side of Stevens Canyon towards Stevens Creek and continues along the north face of the canyon at Stevens Ridge to a point one mile west of Box Canyon. The road descends down the south side of the canyon at a steady six percent grade to Stevens Creek. In traversing the north side of the canyon, the road engineers employ viaducts and a tunnel to achieve a relatively level road grade. The steep cut side of the road acts as a foil for the panoramic views of the canyon below. Numerous turnouts are located on the fill side to accommodate visitors wishing to enjoy the spectacular scenery from the high vantage point of this segment. The horizontal alignment of this segment is characterized by a series of tangential and tight radial curves that hug the steep sides of the canyon. In traversing the steep slopes of Stevens Ridge the road bench is carved out of an exposed rock face

that incorporates dramatic vertical and overhanging rock cuts. This segment of the highway makes the vertical transition between subalpine and montane vegetation by descending from an elevation of 4,300' to 3,000'. This combination of near vertical cliff face, tight radial curves, and a rapid change in elevation creates the most dramatic segment of the road and provides spectacular views of the canyon.

Backbone Ridge Segment: MP 8.0 - 16.3

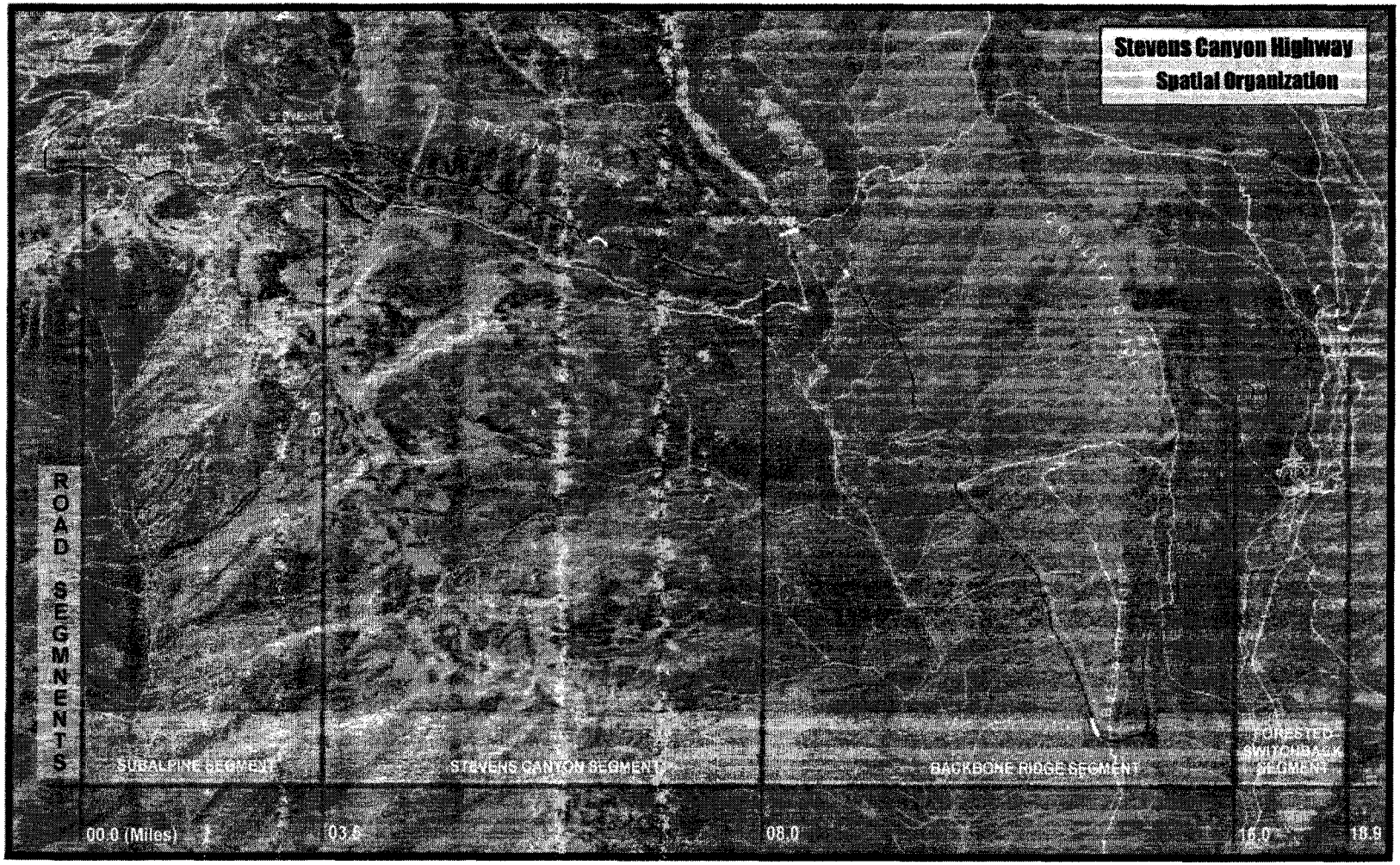
This segment begins one mile west of Box Canyon. It skirts the lower slopes of the Cowlitz Divide, cresting at Backbone Ridge, before descending into lowland forest towards the switchbacks that lead to Ohanapecosh. There are numerous rustic structures along this enclosed segment of road including viaducts, the Box Canyon Tunnel, the Box Canyon Muddy Fork Bridge, Nickel Creek Bridge, and the developed areas at Backbone Ridge and Box Canyon. The coniferous canopy alternates between a dense tunnel of vegetation and veiled views of the canyon below. The horizontal alignment is characterized by a series of gentle tangential curves and long straight sections which reflect a higher design speed for this segment of the highway. The vertical alignment begins with a gentle descent to 2,800', before rising at a steady five percent grade until cresting at Backbone Ridge with an elevation of 3,400'. From this point the highway descends at a constant four to five percent grade to 2,800'. This segment transitions from a gentle slope with minimal rock cuts on the west side of the Cowlitz Divide to a series of dramatic rock cuts on the steep eastern slopes of Backbone Ridge. This segment marks a transition from Stevens Canyon, tracing the lower slopes of the Cowlitz Divide and heading towards the eastern edge of the park. The heavily forested portions of this segment combined with straighter alignments designed to frame views of Mount Rainier and the Tatoosh Mountain Range.

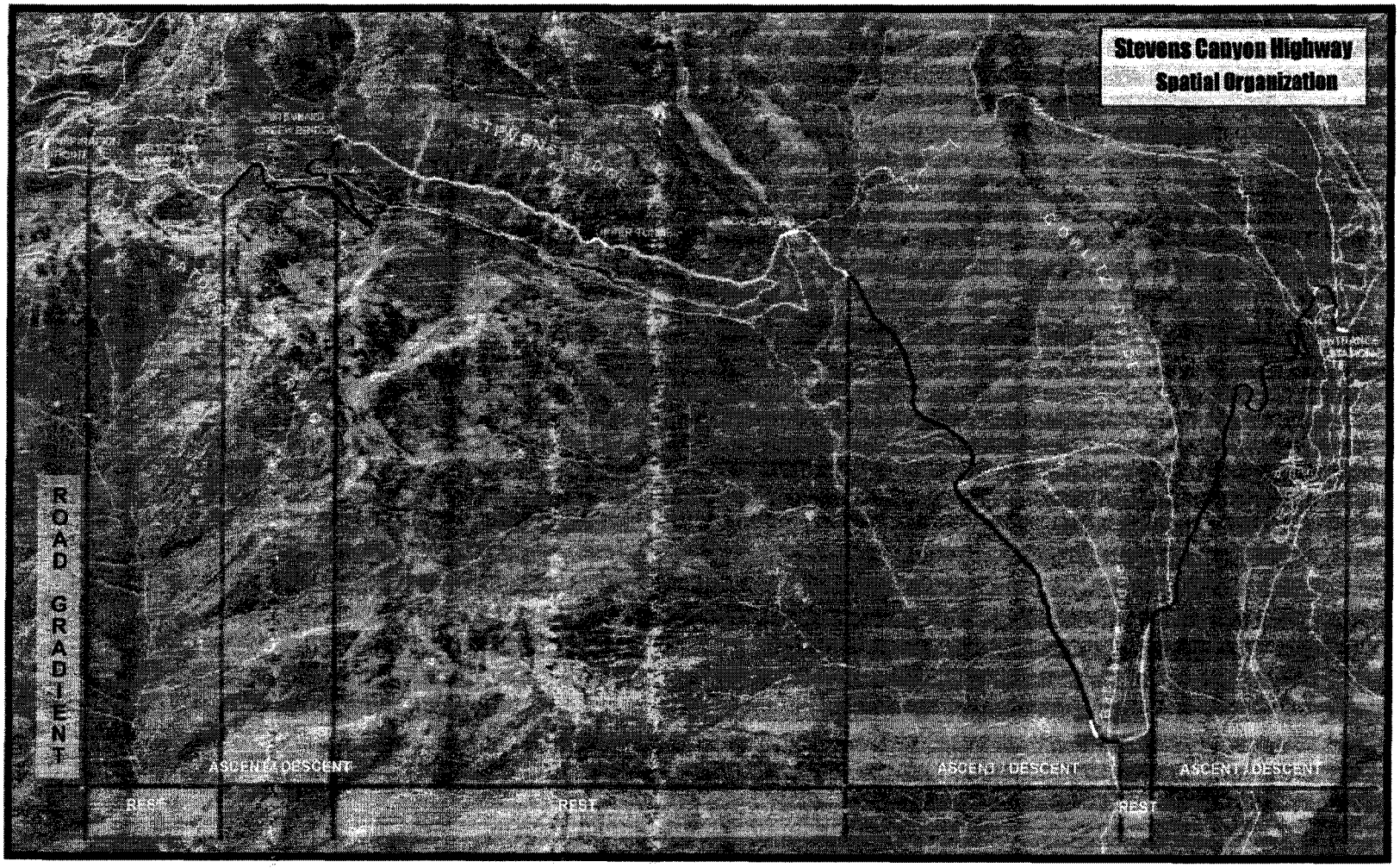
East of Cowlitz Divide Segment: MP 16.3 - 19.0

This short segment winds through old-growth lowland forest passing over two creeks on its descent to the intersection with the Eastside Highway. The major developed areas in this segment are the Grove of the Patriarchs turnout, and the Stevens Canyon Entrance area. The horizontal alignment of this segment features a series of five switchbacks along a banked, superelevated roadway. The vertical alignment is unique for its use of superelevated road and switchbacks which respond to the difficulty of traversing a combination of rock outcroppings and wetlands. The large old-growth trees create a dense canopy and, in combination with the short sight lines, provide few opportunities for viewing the surrounding landscape. This segment is characterized by tight radial curves enclosed by a dense canopy cover.

Conclusion

Despite design changes to the roadway during the Mission 66 era and the growth of vegetation that has obstructed views, Stevens Canyon Highway exhibits a high level of integrity of spatial organization. The highway follows the same alignment and visitors are able to enjoy the spectacular views of the canyon and surrounding peaks that characterized the road after it opened in 1957. The spatial organization of the road contributes to the significance of Stevens Canyon Highway.


Stevens Canyon Highway
Spatial Organization
ROAD SEGMENTS
SUBALPINE SEGMENT
STEVENS CANYON SEGMENT
BACKBONE RIDGE SEGMENT
FOREST EDGE/ SWITCHBACK SEGMENT
00.0 (Miles)
03.8
08.0
16.0
18.9


Stevens Canyon Highway
Spatial Organization
ROAD GRADIENT
ASCENT/DESCENT
REST
ASCENT/DESCENT
REST
ASCENT/DESCENT
REST
ASCENT/DESCENT

2. Circulation

Design Principles

Stevens Canyon Highway is unique in that it serves as both a thorough route and a destination. While state highways are designed to accommodate more traffic at higher speeds, Stevens Canyon Highway was intended to meet the needs of visitors stopping at developed areas and trailheads while also viewing scenery throughout the park. The primary function of the highway was captured by NPS policy Park Road Standards in 1984, which contains the following statement:

> *"Park Roads are for leisurely driving only. If you are in a hurry, you might do well to take another route now, and come back when you have more time."*

Stevens Canyon Highway can be classified as a scenic highway where driving is referred to as a leisure activity, due to the abundance of outstanding natural features that can be viewed when traveling the route. In addition, turnouts along the road provide visitor access to many scenic and popular destinations such as the Grove of the Patriarchs, Reflection Lakes, Box Canyon and a number of backcountry trailheads. The road also provides an east-west connection within the park, alleviating overcrowding at the major developed areas while increasing the Park's visitation capacity at other locations.

The primary functions of Stevens Canyon Highway were established in the 1930s and the design intent followed the naturalistic style, prevalent in this golden era of NPS master planning. Initially, NPS landscape architects advised BPR engineers on the alignment of the highway. BPR engineers surveyed the preferred route, providing detailed plans showing the vertical and horizontal alignment, as well as giving specification for the structural design of the major built features. For their part, NPS landscape architects worked on the aesthetic design of the major structures, providing detailed drawings for the rustic stone facing on bridges, viaducts, box culverts and the Stevens Canyon Tunnel, as well as specifying Type 1 and Type 2 stone guardwalls for the steep fill slope segments. In addition, the NPS identified the location of turnouts, created scenic vistas and provided design plans for a cohesive interpretative display along the length of the highway. They also ensured rock cuts and plantings adhered to the naturalistic style which blended structures and plantings with the natural environment through the use of native materials, natural forms and textures. During construction, the BPR engineers' role was to orchestrate the technical tasks of grading, drainage, slope stabilization, surfacing and the structural aspects of tunnel and bridge design. NPS landscape architects were responsible for revising the alignment, both horizontal and vertical, as well as inspecting the construction of guardwalls, rock barriers, bridges, tunnels, viaducts, rock cuts and developed areas.

The major circulation patterns and features of Stevens Canyon Highway have changed little since the road was completed in 1957. The typical cross section of the road, as described in the following paragraph still follows the standard set in the early construction drawings for the highway. The design speed may have increased along the western flank of Backbone Ridge, but

for the road as a whole, remains virtually the same. Many of the turnouts have retained their form and are still associated with viewpoints and trailheads. The road is designed with turnouts and sidewalks intended to facilitate safe travel and easy access to the south side of Mount Rainier. The major components of circulation retain a high degree of integrity and contribute to the significance of Stevens Canyon Highway. These include cross section, design speed turnouts, trailheads and curbs, and will be described in more detail in the following paragraph.

Cross Section

Stevens Canyon Highway traverses rugged topography, causing the road bench to vary as it negotiates natural barriers. On steep exposed slopes the cross section hugs near-vertical cliff faces that require viaducts to support the road across the steepest segments. At various points along the route, unstable talus slopes require long sections of retaining wall to support the road bench. In other segments naturalistic rock cuts define the cut slopes, and create a foil to the panoramic views beyond the fill side of the road. In the eastern segment, a dense canopy of old-growth forest lines the route with large specimen trees located at the shoulder of the road.

Despite the varied topography through which the road passes, and the resultant adaptation of the road bench common elements define a typical cross section for the highway. The cut slope generally contains either steep talus slopes or naturalistic rock cuts. Rock cuts have sculpted, vegetated crowns that dissipate water and reduce erosion. The fill side is either a talus or vegetated slope and is frequently bordered by a guardwall that is mounted on top of a retaining wall. Less common, but still typical are the raised segments of highway, known as "fill-through," that are located on the east side of Backbone Ridge. The road bed is raised up to 20' above the surrounding ground where it traverses an unusual combination of exposed rock faces and dense old-growth forest with wetlands. Again, less common but still typical are the segments of highway that cut through exposed bedrock i.e. the road is benched out of bedrock. Here, careful attention was given to drainage.

The cross-section of the Stevens Canyon Highway features a striped centerline, two 11' travel lanes and a striped fog line at the exterior edges of the travel lanes. The typical fill side shoulder has a 1'-wide paved edge with a talus or vegetated slope below that varies in grade. Generally, the topography of the area often dictates a steep fill slope angle, although the range for the entire length of the road is specified between 1½:1 to 4:1. The typical cut-side shoulder is also a 1'-wide with a 5' wide ditch that averages 1'8" in height. The angle for the cut slope varies. In the Stevens Canyon segment the rock cuts are often vertical and occasionally overhang the road. The segments to the east and west of Stevens Canyon tend to match the gradient of the slopes on the fill side of the road, between 1½:1 to 4:1. Overall the cross section of the road retains a high degree of integrity and contributes to the significance of Stevens Canyon Highway.

Design Speed

The design speed of the road ranges between 15 mph at the switchback on the southern slope of Stevens Canyon to 45 mph in the Backbone Ridge segment. The west segment of the road from the Nisqually Road intersection to Box Canyon has a slower design speed, restricting travel to 35 mph. The segment east of Box Canyon— around Backbone Ridge and down to the intersection with the Eastside Highway— is posted at 45 mph. The slower speed limit for the

west segment is related to the radial and tangential curves that predominate, as well as the steep slopes associated with the Stevens Canyon area. The east segment is characterized by gentle tangential curves and long straight sections. In addition, the straight sections allow for extensive use of a dashed centerline encouraging vehicular passing. This segment also features the only slow traffic lane along the road, which is situated near the Backbone Ridge turnout. The long straight sections, gentle tangential curves, and passing lane allow for an increase in the posted speed limit to 45 mph.

Exceptions to the general speed limits occur in relation to switchbacks and developed areas. The switchbacks are located at the aforementioned 80' radial curve at the west end of Stevens Canyon and on the east side of Backbone Ridge. Here the speed limits are restricted to 15 mph and 20 mph respectively. Traffic is also slowed in the developed areas of Box Canyon and the Grove of the Patriarchs with the speed limits restricted to 15 and 20 mph respectively. The varying design speeds induced by road alignment, varying site line distances and elevation change retain a high degree of integrity and contribute to the significance of Stevens Canyon Highway.

Turnouts

The presence of numerous turnouts provides the visitor with ample opportunities to view the wide variety of natural landscapes associated with the highway. In addition, turnouts are also associated with trailheads, rock cuts and developed areas such as Inspiration Point, Reflection Lake, Box Canyon, Backbone Ridge, and the Grove of the Patriarchs. The turnouts associated with developed areas include a median, a sidewalk and a stone or asphalt curb. The turnouts in developed areas also offer amenities such as wayside interpretive exhibits, comfort stations, and drinking fountains. These turnouts are approximately 50' to 100' longer than typical turnouts, providing additional parking for more visitors.

The turnouts in developed areas account for less than ten percent of the total number. The more typical turnouts for Stevens Canyon Highway provide parking for one or two vehicles and are located along the shoulder of the road. Their placement is usually in relation to a view, both framed and panoramic. They are generally 80' to 100' long, and may be associated with rock cuts and occasionally trailheads. The turnouts have gravel surfaces, although some are paved, and are often constructed using the fill material from adjacent rock cuts. The historic elliptical shape of these turnouts allowed for a comfortable ingress and egress from the highway, and minimal impacts to the surrounding landscape. The edge of the turnout is often delineated by a rock barrier.

There are a total of fifty-one turnouts along Stevens Canyon Highway. Over time, the shape and surface material of turnouts has been altered. Today, eight of the historic turnouts have been enlarged and paved over; these turnouts have lost their integrity. Twelve turnouts have been added to the road since 1957 and their shape does not follow the configuration of the historic turnouts. However, thirty-one of the turnouts have been preserved and the overall integrity of the turnouts is high. The turnouts contribute to the significance of the Stevens Canyon Highway.

Trailheads

Trails along Stevens Canyon Highway enable visitors to get out of their cars and explore the park. The trails adjacent to Stevens Canyon Highway range in scope from short hikes, such as the Grove of the Patriarchs trail, to longer hikes such as the Box Canyon trail, which ties into the Wonderland Trail. Many of the turnouts associated with trailheads are bell-shaped, allowing parking for up to fifteen vehicles. In addition, trailheads are often marked by large stones and planted with vegetation to make them inconspicuous. Occasionally, the beginning of the trail is screened from the road by a berm, increasing the separation of the trail from the highway. Despite minor alterations to trailheads often caused by modifications to their associated turnouts, they retain integrity and contribute to the significance of Stevens Canyon Highway.

Curbs

There are a variety of curbs on Stevens Canyon Highway that are associated with tunnels, bridges, medians, turnouts, and sidewalks. Curbs are constructed from either granite or exposed aggregate concrete and are generally 2' to 3' in length. They have 6" to 8" exposure above the surface of the road and have an average depth of 6". Tunnels and bridges along the highway include curbs with their associated sidewalks to facilitate the movement of pedestrians. Curbs can also be associated with turnouts and medians, acting as a visual barrier to vehicles. The Park added asphalt curbs in the 1960s and 1970s in order to direct drainage from the road bed to the fill slopes. The earliest record of asphalt curbing is a set of drawings for repaving the entire highway in 1965. The drawings list the various locations for the 4,815' of asphalt curbing. The asphalt curbs are generally located in the Stevens Canyon and Backbone Ridge area and are non-contributing features. Despite the addition of the asphalt curbs, the remainder of the curbs retain high integrity and contribute to the significance of Stevens Canyon Highway.

Intersections

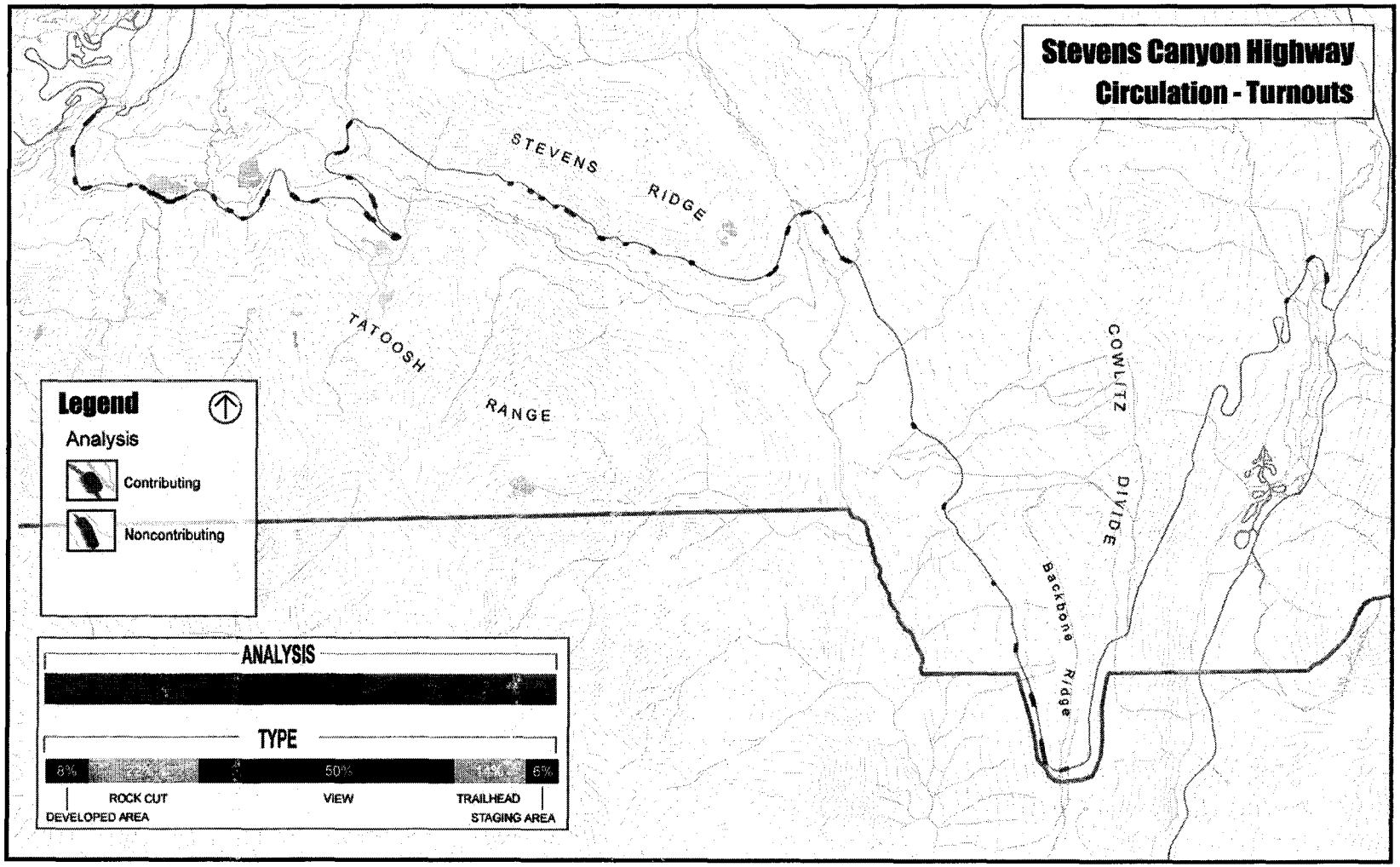
There are two major intersections along Stevens Canyon Highway. The first intersection is located at the west end of the road where the Nisqually Road meets the Paradise Valley Road. This tee intersection is a modern addition, configured after the original wye intersection was removed. When the highway was opened in 1957, the Paradise Valley Road intersected with Stevens Canyon Highway at Inspiration Point. In 1958, a loop to Paradise was created and the historic intersection was closed and relocated to its current location. The intersection has lost integrity and does not contribute to the significance of Stevens Canyon Highway.

The other junction is located at the east end of the road where it intersects with the East Side Highway. This intersection was initially built in a wye configuration. However, with the completion of the Stevens Canyon Entrance Station development in 1964, the wye intersection was removed and replaced with a tee intersection. A stop sign was added later for eastbound traffic where Stevens Canyon Highway meets the Eastside Highway. The intersection has lost integrity and does not contribute to the significance of Stevens Canyon Highway.

Table showing circulation features for the Stevens Canyon Highway

Feature ID	Feature Name	Contributing	Compatible	Condition	Length	Type
MP00.464	Turnout	Yes		Good	216	Developed Area
MP01.204	Turnout	Yes		Good	78	Rock Cut
MP01.274	Turnout	Yes		Good	120	View / Trailhead
MP01.298	Turnout	Yes		Good	320	View
MP01.410	Turnout	Yes		Good	30	View
MP01.482	Turnout	Yes		Good	160	Trailhead
MP01.768	Turnout	Yes		Good	120	View
MP01.920	Turnout	Yes		Good	120	View
MP02.044	Turnout	Yes		Good	90	View
MP02.100	Turnout	Yes		Good	267	View / Rock Cut
MP02.234	Turnout	Yes		Good	135	View
MP02.672	Turnout	Yes		Good	160	View
MP02.872	Turnout	Yes		Good	140	View / Trailhead
MP03.616	Turnout	Yes		Good	300	View
MP04.176	Turnout	Yes		Poor	100	Trailhead
MP06.310	Turnout	Yes		Good	142	View / Rock Cut
MP06.438	Turnout	Yes		Good	89	View / Rock Cut
MP06.842	Turnout	Yes		Good	200	View
MP07.032	Turnout	Yes		Poor	62.5	View / Rock Cut
MP07.240	Turnout	Yes		Good		View / Rock Cut
MP08.112	Turnout	Yes		Good	410	Developed Area
MP08.630	Turnout	Yes		Good	275	Developed Area
MP09.098	Turnout	Yes		Good	300	View
MP10.434	Turnout	Yes		Good	160	Rock Cut
MP11.200	Turnout	Yes		Good	140	Rock Cut
MP11.854	Turnout	Yes		Good	50	Rock Cut
MP12.344	Turnout	Yes		Good	220	Rock Cut
MP12.706	Turnout	Yes		Good	400	Rock Cut
MP18.160	Turnout	Yes		Good	100	Trailhead
MP18.492	Turnout	Yes		Good	250	View
MP18.698	Turnout	Yes		Good	290	Developed Area
MP00.202	Turnout	No	No	Good	490	View
MP00.682	Turnout	No	No	Good	184	Rock Cut
MP00.784	Turnout	No	No	Good	121	Rock Cut
MP01.116	Turnout	No	No	Good	240	Staging Area
MP02.304	Turnout	No	No	Good	300	View / Modified
MP03.294	Turnout	No	No	Good	150	Rock Cut
MP03.356	Turnout	No	No	Good	45	Rock Cut
MP03.546	Turnout	No	No	Fair	80	Staging Area
MP03.900	Turnout	No	No	Good	280	View / Modified
MP04.532	Turnout	No	No	Good	300	Trailhead / Modified
MP04.760	Turnout	No	No	Good	140	View / Modified
MP04.862	Turnout	No	No	Good		Rock Cut / Modified
MP06.066	Turnout	No	Yes	Good	170	View
MP06.220	Turnout	No	Yes	Good	135	View
MP06.526	Turnout	No	No	Good	400	View
MP07.528	Turnout	No	No	Good	75	View / Modified

MP08.440	Turnout	No	No	Good	180	Trailhead / Modified
MP08.836	Turnout	No	No	Good	200	Rock Cut
MP13.040	Turnout	No	No	Good	920	Developed Area / Modified
MP13.338	Turnout	No	No	Good	400	Staging Area
MP00.472	Curb	Yes		Good		Concrete/Turnout
MP01.306	Curb	Yes		Good	1173	Granite/Turnout
MP08.134	Curb	Yes		Good	400	Concrete/Turnout
MP08.646	Curb	Yes		Good	400	Granite/Turnout
MP18.694	Curb	Yes		Good		Stone/Turnout
MP18.868	Curb	Yes		Good		Stone/Entrance Station
MP03.670	Curb	No	No	Fair	1238	Asphalt/Slope
MP06.596	Curb	No	No	Fair		Asphalt/Slope
MP06.738	Curb	No	No	Poor	90	Asphalt/Slope
MP11.320	Curb	No	No	Good	150	Asphalt/Slope
MP11.730	Curb	No	No	Good	110	Asphalt/Slope
MP13.040	Curb	No	No	Good	920	Concrete/Turnout
MP13.738	Curb	No	No	Good	400	Asphalt/Slope
MP14.766	Curb	No	No	Fair	600	Asphalt/Slope
MP14.990	Curb	No	No	Good	100	Asphalt/Slope
MP00.001	Intersection	No	No	Good		Asphalt
MP18.998	Intersection	No	No	Good		Asphalt


Stevens Canyon Highway
Circulation - Turnouts
STEVENS RIDGE
TATOOSH RANGE
COWLITZ DIVIDE
Backbone Ridge
Legend
Analysis
Contributing
Noncontributing
ANALYSIS
TYPE
8%
50%
5%
ROCK CUT
DEVELOPED AREA
VIEW
TRAILHEAD
STAGING AREA

3. Buildings and Structures

The Stevens Canyon Highway has no historic buildings, but many historic structures. The structures associated with Stevens Canyon Highway, such as bridges, tunnels, guardwalls and viaducts are unifying elements that add to the historic character of the road. With the Bureau of Public Roads and NPS collaborating on the engineering aspects of the road, NPS landscape architects took sole responsibility for the aesthetic and experiential quality of the highway. Adopting the rustic style of architecture, the road was designed to present a built landscape that avoided monotony and blend skillfully into the surrounding landscape.

Rustic architecture blends many structures along Stevens Canyon Highway with the surrounding landscape. The design of these features incorporated techniques and materials that predispose a naturalistic vernacular design style over a standardized design style. This included the use of native stone as the predominant exposed material in the construction of these features and the use of irregular, naturalistic forms. Structures such as guardwalls and rock barriers were designed to blend with the natural features they abutted. For functional structures that could not be designed using the rustic vocabulary, NPS landscape architects screened these features from the visitor, using native stone or vegetation.

The efforts to achieve variety led to great care being taken in the specifications and design of stone guardwalls, rock barriers, and the stone facing on bridges and tunnels. The efforts included individual specifications for keystones that form the arch ring of historic bridges. NPS landscape architects created full size template drawings to ensure that the rocks were cut to the intended size. In addition, intersections within the joinery of stone work were specified so that four stone corners would never meet, creating an irregular, more varied texture to the masonry. The attention to detail and devotion to design principles is still evident throughout the entirety of the road, creating a cohesive, stimulating experience along the Stevens Canyon Highway.

Stevens Canyon Tunnel – MP 06.920

Constructed in 1936, Stevens Canyon Tunnel (also known as the Upper Tunnel) is one of the major historic structures in the Stevens Canyon area of the highway. The tunnel permits access through a very steep section of exposed bedrock on the north side of the canyon where cliff faces are vertical and in some sections overhang the road. Stevens Canyon Tunnel is 210' long and is bored through solid stone. It is 32' wide at the spring line, bored at a 16' radius, and stands 19'9" in height from the center line of the roadway to the tunnel crown. The tunnel features an architectural portal constructed with stone facing over the reinforced concrete core. The stone facing on the portals is laid in an orthogonal, ashlar pattern with a keystone arch. The interior walls are reinforced with a 1' deep concrete liner. The portal on the west end of the tunnel features a vegetation pocket behind the portal entry, which was planted with vine maple. The portal on the east side is framed by a dramatic overhanging rock cut that extends over most of the westbound travel lane. The overall condition of the tunnel is good, however the gaskets around the expansion joints within the interior of the tunnel need to be replaced. Stevens Canyon Tunnel is an outstanding rustic structure that contributes to the significance of Stevens Canyon Highway.

Box Canyon Tunnel – MP 08.532

Completed by the early 1950s, Box Canyon Tunnel (also known as the Lower Tunnel) is one of the major rustic structures along Stevens Canyon Highway. This tunnel is part of the development centered around Box Canyon that continues to be a major draw for visitors who stop and explore this area. This tunnel differs from the other two tunnels in the park, because it lacks an architectural entry portal and a concrete liner. The original plans did call for a concrete lining, but upon boring, the excavators found the bedrock to be of such high quality that it became unnecessary for any reinforcement. The treatment of the exposed bedrock and the efforts made to remove drill scars on the portals and the interior surface emphasizes great craftsmanship and the rustic appearance. The tunnel is 160' long and bored through solid rock. The tunnel is 34' wide at the spring line and is bored on an 18' radius, standing 24'6" in height from the centerline of the roadway to the tunnel crown.

BPR completed the design drawings for the tunnel in the fall of 1940. With the United States entry into WWII, the construction of the tunnel was subsequently delayed until December 1949, at which time the construction contract Tunnel was awarded to J.H. and W.J. Conley Company of Portland. Groundbreaking began in May 1950 and the work was completed by the early 1950s. There have been no major alterations to the tunnel since it was built and it is in good condition. However, due to freeze and thaw during the winter months, small rocks often break loose at the portals and this will eventually effect the overall appearance of the structure. Box Canyon Tunnel is a unique example of a rustic-style tunnel within the park and contributes to the significance of Stevens Canyon Highway.

Bridges

There are five bridges along the Steven Canyon Highway, all of which were designed and built during the period of significance. The Stevens Creek Bridge, the Box Canyon Muddy Fork Bridge and the Nickel Creek Bridge were all built in conformance with rustic design standards developed by the NPS Division of Landscape Architecture in the late 1920s and early 1930s. The last two bridges built along Stevens Canyon Highway were Falls Creek Bridge and Ohanapecosh River Bridge on the east side of the Cowlitz Divide. The design of both structures did not follow the principles of rustic architecture in form and materials. The bridges are incompatible with the character of the road. Therefore, despite the fact that they were built at the end of (and therefore during) the period of significance for the road, the Falls Creek Bridge and Ohanapecosh River Bridge are non-contributing due to the modern styling and use of exposed non-native materials. The bridges are described in more detail in the following paragraphs.

Stevens Creek Bridge – MP 04.802

Stevens Creek Bridge is an impressive example of rustic craftsmanship. Like the other stone-faced bridges on the highway, it blends with the adjacent landscape through the use of native materials and heavy tooling of the stone to create a varied texture. The bridge is a reinforced concrete arch that combines a modern structure with native stone cladding on the faces of the arches, the guard wall Type1B and 1D parapets, and the abutment walls. The main arch has a 78' span between spring points and the bridge is 110' long and is 36'-wide between the inside faces of the guard walls.

Stevens Creek Bridge was the first bridge completed on the highway, and the only one completed before the onset of WWII, which halted all construction. The design for the bridge was a joint venture by BPR who provided the structural design and the NPS Division of Landscape Architecture who provided the aesthetic intent, and included specifications for the native stone facing. In December of 1939, Sam Orino was awarded the contract for the bridge and it was completed by the early 1940s. There have been no major alterations to the bridge since it was built and it is still in good condition. There are some minor maintenance concerns, including the need for repointing, effervescence on the underside of the arch where the masonry veneer joins the concrete deck, and an eroded fill slope, including lost vegetation, which has exposed the concrete footings on the southeast side of the bridge. This bridge is an excellent example of the rustic style of architecture along this historic road and contributes to significance of Stevens Canyon Highway.

Box Canyon Muddy Fork Bridge – MP 08.580

The dramatic location of the Box Canyon Muddy Fork Bridge, 180' above the Muddy Fork, and the massive retaining walls and abutments which emerge out of the canyon walls make this the highway's most impressive example of rustic craftsmanship from the historic period. The bridge is a reinforced concrete barrel arch that combines a modern structure with native stone cladding on the faces of the arches, the guard wall Type 1D parapets on both sides, and the abutment walls. The main arch has a 79' span between spring points. The bridge is 160' long and 40' 8"-wide between the inside faces of the guard walls.

The contract for the bridge was awarded to the Seattle firm of Hawkins and Armstrong. This bridge, although the first to be constructed after WWII, was built according to the pre-war design. BPR provided the structural design and the NPS Division of Landscape Architecture provided the aesthetic intent with a rustic style that included specifications for large stones with heavy tooling and irregular coursing. The bridge is in good condition, although there are patches where the mortar is soft to the touch and will require repointing. The Box Canyon Muddy Fork Bridge is a remarkable structure that contributes to the significance of Stevens Canyon Highway.

Nickel Creek Bridge – MP 09.164

The Nickel Creek Bridge fits seamlessly into the rustic context of the highway and the retaining walls and abutments blend with the adjacent landscape. This structure was the last rustic bridge to be constructed in the park and exemplifies the unobtrusive nature of rustic craftsmanship from the historic period. The bridge is a reinforced concrete barrel arch that combines a modern structure with native stone cladding on the faces of the arches, the Type 1D and Type 1B guardwalls, and the abutment walls. The main arch has a 77' span between spring points. The bridge is approximately 150' long and 30' 8"-wide between the inside faces of the guard walls.

The contract for the Nickel Creek Bridge was awarded in 1952 to the Seattle firm of Hawkins and Armstrong who had also been awarded the contract for the Box Canyon Muddy Fork Bridge. Once they finished construction of the Box Canyon Muddy Fork Bridge their efforts were concentrated on Nickel Creek Bridge. There have been no major alterations to the bridge since it was built and it is in good condition. Minor repairs are required, including some

repointing of the mortar, especially on the guardwalls, and the replacement of lost vegetation which has exposed raw concrete footings. Nickel Creek Bridge is an excellent example of the rustic style of architecture along the historic road and contributes to the significance of Stevens Canyon Highway.

Falls Creek Bridge and Ohanapecosh River Bridge – MP 18.472 and MP 18.808

Although Falls Creek and Ohanapecosh River Bridge mark the endpoints of the highway they are devoid of the rustic details of the other structures found along the road. The bridges were constructed of cast-in-place reinforced concrete beams and have the only examples of exposed concrete end walls and steel railings along the highway. The contract for these bridges, the last two to be built on the Stevens Canyon Highway, was awarded to the Wayne Construction Company of Seattle. A 1939 design drawing the Ohanapecosh River Bridge in the rustic style has a reinforced concrete arch with stone faced guardwalls. However, this design was not built in favor of the modern style we see today.

The two bridges are in fair condition with excessive efflorescence and spalling on the exposed concrete surfaces. Both bridges do not blend into the surrounding landscape and do not use native materials. The bridges are incompatible and do not contribute to the significance of Stevens Canyon highway.

Viaducts

Some of the most impressive structures on the Stevens Canyon Highway are rarely seen by the visitor. Six viaducts were built to overcome difficult terrain and were designed to span areas of unstable soil, waterways, and locations that would have required excessive fill. The viaducts were among the most challenging structures to construct on the highway due to there precarious locations. Built of reinforced cast-in-place concrete, large forms had to be built before the concrete could be poured.

The viaducts range in size from the 310' long eight bay viaduct at Backbone Ridge (MP13.566) to the 218' long single bay viaduct, located immediately west of the upper tunnel (MP06.876). The engineering for the reinforced concrete structures varied although all were designed by BPR in collaboration with NPS Division of Landscape Architecture. The design treatment for the stone facing, including the guardwalls, is consistent with NPS rustic guidelines. For example, the viaduct at MP06.876 located one half mile west of the upper tunnel, blends with the surrounding landscape. The exposed rock cliff face abuts a super elevated concrete deck of the viaduct. The deck is formed into a smooth cantilevered radius which has a large tooled-stone guardwall attached. This attention to detail provides visitors with a seamless connection from the exposed rock face to the viaduct guardwall connecting with the tunnel.

The majority of six viaducts are in good condition with the exception of the eastern most viaduct at MP15.12. Work is required to address the structural stability of the guardwall in the middle segment where stones are rotating away from the road. All of the viaducts' stone facing require general repairs. Mortar requires repointing and missing or damaged stones need to be replaced. The viaducts are remarkable rustic structures along the road that contribute to the significance of Stevens Canyon Highway.

Guardwalls and Retaining Walls

There are twenty-five guardwalls with associated retaining walls along Stevens Canyon Highway, twenty-two of which were designed by the NPS and built between 1931 and 1941. Because guardwalls are associated with rugged topography, the majority of these features are found in two areas of the highway; there are fourteen guardwalls with retaining walls between Stevens Creek and Box Canyon and seven associated with the Cowlitz Divide area. Guardwalls with associated retaining walls are constructed of three native stone types: salt and pepper granite, green granite, and andesite.

The guardwalls with retaining walls are classified as masonry Type 1 and 2 guardwalls, which were standardized by the NPS Division of Landscape Architecture in the 1930s. The nine Type 1A guardwalls with retaining walls on Stevens Canyon Highway are approximately 2' high, 1.5' wide, and range in length from 25' to 300'. The two Type 1D guard walls are similar in size and shape to Type 1A, but also include sidewalks with granite curbs. The highway includes ten Type 2 guardwalls with retaining walls, marked by their crenellated design. The standard height of the merlons is 24" and the embrasures are 18". Each embrasure is 10' long and the merlons are 2' long. The width of the guardwalls averages 18" and the ends are occasionally flared to blend the structure with the surrounding landscape.

The construction of guardwalls and retaining walls occurred concurrently with roadway clearing and grading because retaining walls (with their associated guardwalls) were used to retain the fill for the road bench across steep terrain. Therefore, the craftsmanship of the guardwalls and retaining walls reflect the various contractors responsible for their assembly. The contractors worked from specification drawings provided by the NPS Division of Landscape Architecture, which included details for two different styles of guardwall with various subcategories. The rustic design style calls for the use of local materials for built structures in order that they blend with the natural landscape. The stones used for these features were obtained from rock quarries in the vicinity of the highway.

Stevens Canyon Highway was divided into 5 sections (4A-4D) during construction. Sections 4A and 4B were cleared and graded by a single contractor, Holmberg and Norman Inc., and Colonial Building Co., respectively. Therefore, the guardwalls within these sections exhibit consistent design and quality. The guardwalls from mile 0.0 to 6.6 are built with highly skilled tooling of the stones. The walls are built in both regular and random courses. The stones are cut into hewn or ashlar forms that exhibit a high degree of relief and narrow masonry joints.

Section 4C was the most difficult section to grade of all the sections on Stevens Canyon Highway because the road was etched into the face of the canyon wall along Stevens Ridge. In addition to their work on Section 4B, Colonial Building Co. was responsible for grading and guardwall construction of the western portion of Section 4C. The grading and guardwalls along the eastern portion of Section 4C were completed by Elliot and Co. In particular, the guardwalls built by Elliot and Co. resemble NPS design guidelines more than any other portion of the highway – so much so that the merlons are consistently built with three top stones and three base stones. In addition, the eastern most portion of 4C (completed after WWII) was constructed using the Type 1 guardwall design. When compared to Sections 4A, 4B, 4D, and 4E, the east

segment of section 4C guardwalls differ due to the bossed edge and moderate relief of the tooling on the stones.

From Box Canyon to the junction with East Side Highway, the guardwalls are constructed with hewn and semi-hewn stones. The size of the stones range between medium to large and the bossed edges are less defined. The guardwalls found along this section exhibit a range of tooling and there is a mix of random and regular coursing. Sam Orino and Co. was responsible for the majority of grading and guardwall construction throughout this section (projects 4D and 4E). The green granite stone is used regularly throughout sections 4D and 4E with Nickel Creek Bridge constructed entirely out of this type of stone. There is a short portion of section 4E (MP16.000 to the East Side Highway) that includes guardwalls constructed with andesite – a material obtained from rock cuts during construction. In particular, the guardwalls of Section 4E use the largest and most roughly hewn stones found on Stevens Canyon Highway; they recall Sam Orino and Co.'s earlier work on the Deer Creek Bridge along the East Side Highway.

There are eight retaining walls without guardwalls, six of which were built from 1931 to 1957. The stones used in these structures range from unhewn, semi-hewn to hewn. They range in size from 1'x 2'x 1' to 4'x 3'x 2', with the largest stones placed at the bottom of the wall. The masonry joints tend to be wider and less refined than the exposed joints of the hewn and ashlar stone guardwalls. The form of the retaining walls vary in response to the natural surroundings; they curve to follow the alignment of the road and their height depends upon the grade of the fill slope.

Since 1957, three guardwalls with retaining walls and two retaining walls were added to the highway due to road slumps and landslides. The guardwalls and retaining walls are generally in fair condition and still exhibit design and construction details that are true to the rustic style of architecture. Theses structures retain a high degree of integrity and appreciably define the historic character of the highway. The Stevens Canyon Highway has the largest collection of masonry guardwalls and retaining walls in the park's NHLD. The guardwalls and retaining walls are highly crafted structures that contribute to the significance of Stevens Canyon Highway.

Rock Barriers

Rock barriers are located along the length of Stevens Canyon Highway. They were designed by NPS landscape architects to provide a variety of uses including the delineation of turnouts, the top of fill slopes or trailheads, and blend the ends of guardwalls with the surrounding landscape. Positioned along the shoulder of the road, rock barriers delineate the top edge of potentially dangerous slopes adjacent to the roadway. Rock barriers at turnouts primarily limit vehicle encroachment onto vegetated areas. The twenty-five contributing rock barriers along Stevens Canyon Highway tend to be located along the east half of the highway; the fifteen non-contributing rock barriers are generally located in the west half. Approximately half of these structures are associated with turnouts and half are associated with fill slopes adjacent to the shoulder of the road. Nearly all the rock barriers are arranged in a linear pattern. The NPS design standards for rock barriers outlined a series of characteristics including specifications for height, width, shape and spacing. Although there is variation among rock barriers, a pattern has emerged of common characteristics indicated in the table below.

Typical Rock Barrier Characteristics

- Rocks are irregularly spaced between 3' to 5' apart, but may vary from 2' to 6' apart depending upon location
- At least one-third of each rock is recessed into the ground
- Rock heights range from 2' to 2.5' and height is typically less than width, which ranges from 3' to 6' wide
- The strata of the rock is oriented to blend with the natural rock strata found in their vicinity
- The placement of the rock follows the line of the road shoulder or turnout they are associated with
- Rocks are generally placed in a linear alignment
- An ideal barrier rock is five-sided with triangular shaped faces

A series of rock barriers alternate with Type 2 guardwalls. This deliberate, alternating sequence was designed by NPS landscape architects to breakup the monotony of long guardwalls along the highway. Single, isolated rocks are also found at the termini of guardwalls, blending the linear lines of guard walls into the landscape. In addition, isolated rocks are used to demark trailheads.

Twenty-five of the forty-two rock barriers along Stevens Canyon Highway are contributing features. The quality and character of the contributing rock barriers are highly characteristic features of the road. They represent the rustic style of design employed by the NPS. Seventeen rock barriers, mostly along the western segment of the road, are non-contributing. Many of these rock barriers are replacement structures that do not have the typical characteristics of historic rock barriers. Despite the loss of integrity to the rock barriers in the Stevens Canyon segment, overall, the rock barriers exhibit a high level of integrity and contribute to the significance of Stevens Canyon Highway.

Stone Pilaster and Wood Rail Fence

There are two stone pilaster and wood rail fences on the Stevens Canyon Highway, one located at Reflection Lakes (MP 1.394) and one at Backbone Ridge (MP13.040). Their design consists of stone veneered concrete posts 18" square and 24" high spaced 8' on center with a single 6"-square wood rail spanning between posts. The rail is mounted by hardware to the pilasters and is mounted with a diamond orientation. The design of the posts and rails does not follow NPS rustic guidelines which call for more irregular spacing, large to medium stones, and the use of unmilled wood. The stone pilasters are highly regular, using small cut stones with straight edges and tight, crisp vertices and corners. They do not conform to rustic guidelines and are non-contributing features.

Stevens Canyon Entrance Station

The Stevens Canyon Entry Station was constructed in 1964. The design used materials that were not rustic. These included wood board and batten siding, asphalt shingle roofing, sliding aluminum windows, and concrete foundations. None of the materials recall the guidelines for rustic structures which included wood lap or log siding, rock clad foundations, and wood shake roofing. Instead, the entrance station design represented modern architecture in the clean lines, unadorned facades and windows, small scale of components and simplicity of form. Although in fair condition, the entrance station does not contribute to the significance of Stevens Canyon Highway.

Comfort Stations

The three comfort stations along Steven Canyon Highway are located at Stevens Creek trailhead, Box Canyon, and the Grove of the Patriarchs. All three structures are similar and follow a standard modern design developed by the NPS in the 1950s. Each structure is a one story box, 22' by 17' feet with an 8' plate height. The materials are wood board and batten siding, asphalt shingle roofing and concrete foundations. Each structure has a shallow pitched gable roof, single paned awning windows and clean rectilinear lines. These are distinct from rustic comfort stations built in the park before WWII. Rustic comfort stations have more steeply pitched roofs, multi paned windows, cedar shingle roofs, lap or siding, battered stone foundations and wood plank doors. The modern design of the comfort stations along Stevens Canyon highway is incongruous with the rustic character of the road, and therefore the comfort stations are non-contributing features.

Box Canyon Exhibit Shelter

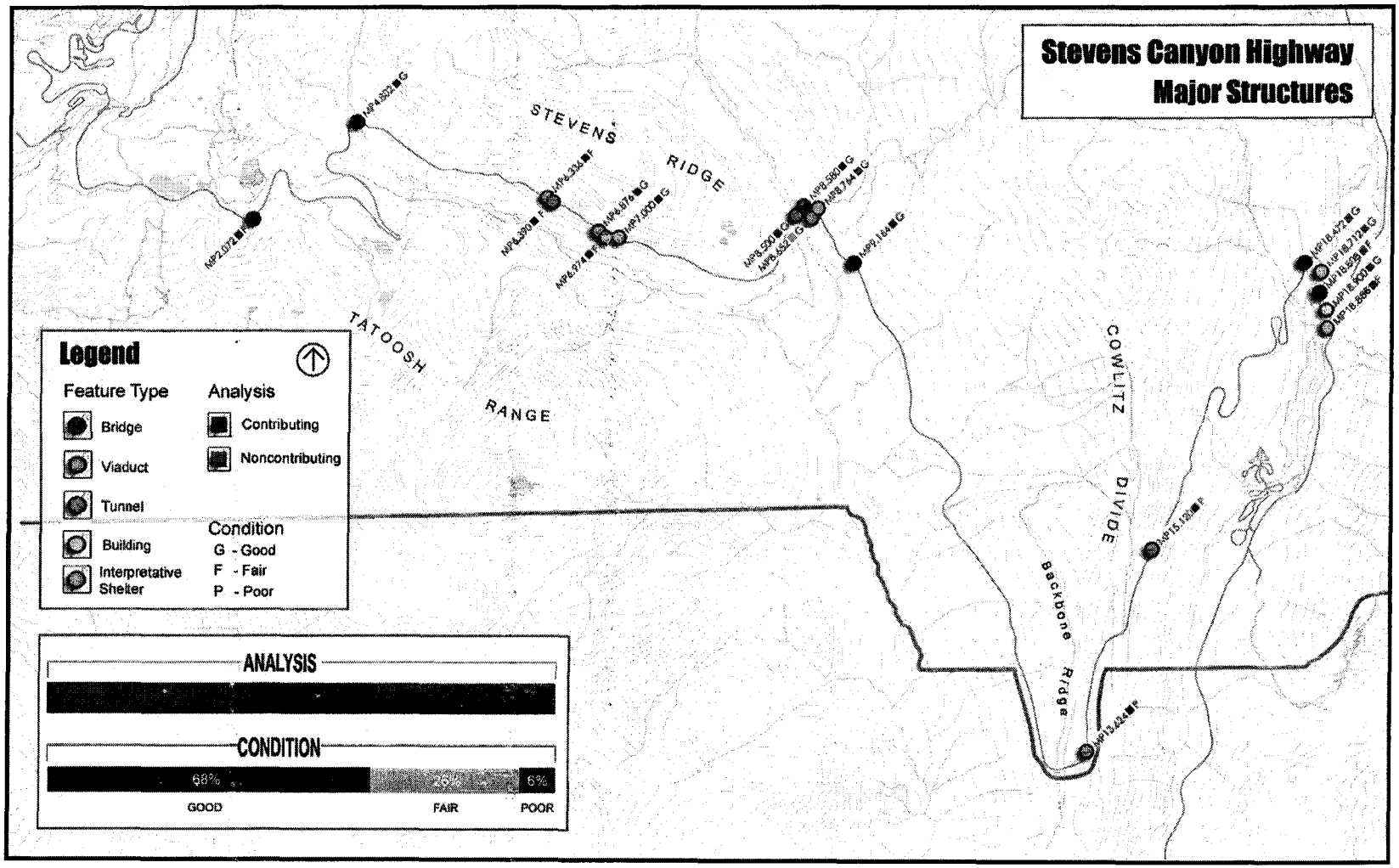
The Box Canyon Exhibit Shelter was designed in 1955 and constructed soon after. It was part of the Mission 66 goal to expand interpretation throughout the park, to enhance the visitor experience. This is the only exhibit shelter on the Stevens Canyon Highway and it has some rustic elements such as oversized structural members and use of native materials. However, the shelter conflicts with NPS rustic guidelines in place during the period of significance, in it's open location, it's milled lumber and tightly dressed stones. In addition, the form of the shelter is more modern than rustic, evidenced by the very long, diagonal braces, and the relatively shallow pitch of the roof. The Box Canyon Exhibit Shelter does not contribute to the significance of Stevens Canyon Highway.

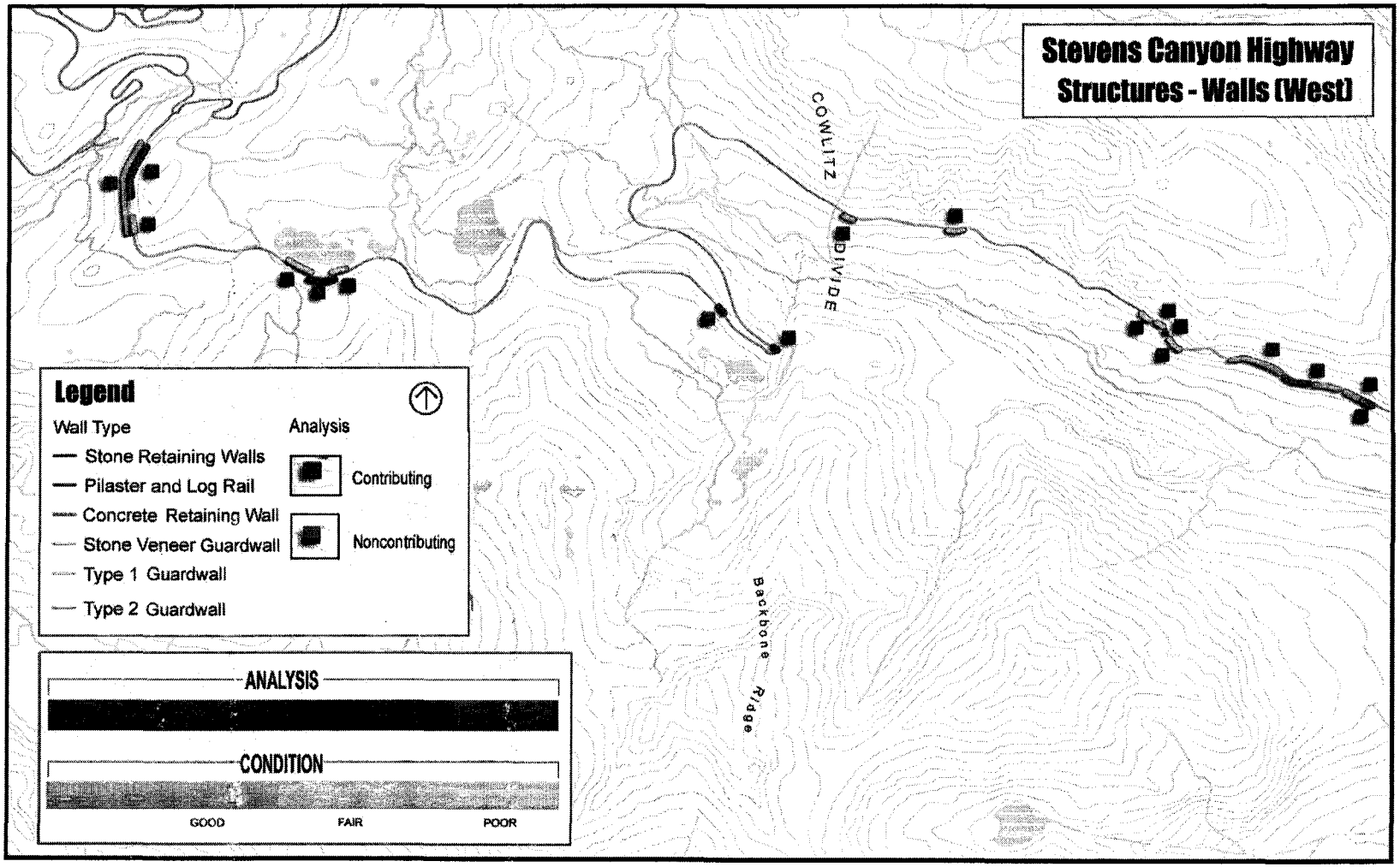
Table showing structures associated with the Stevens Canyon Highway

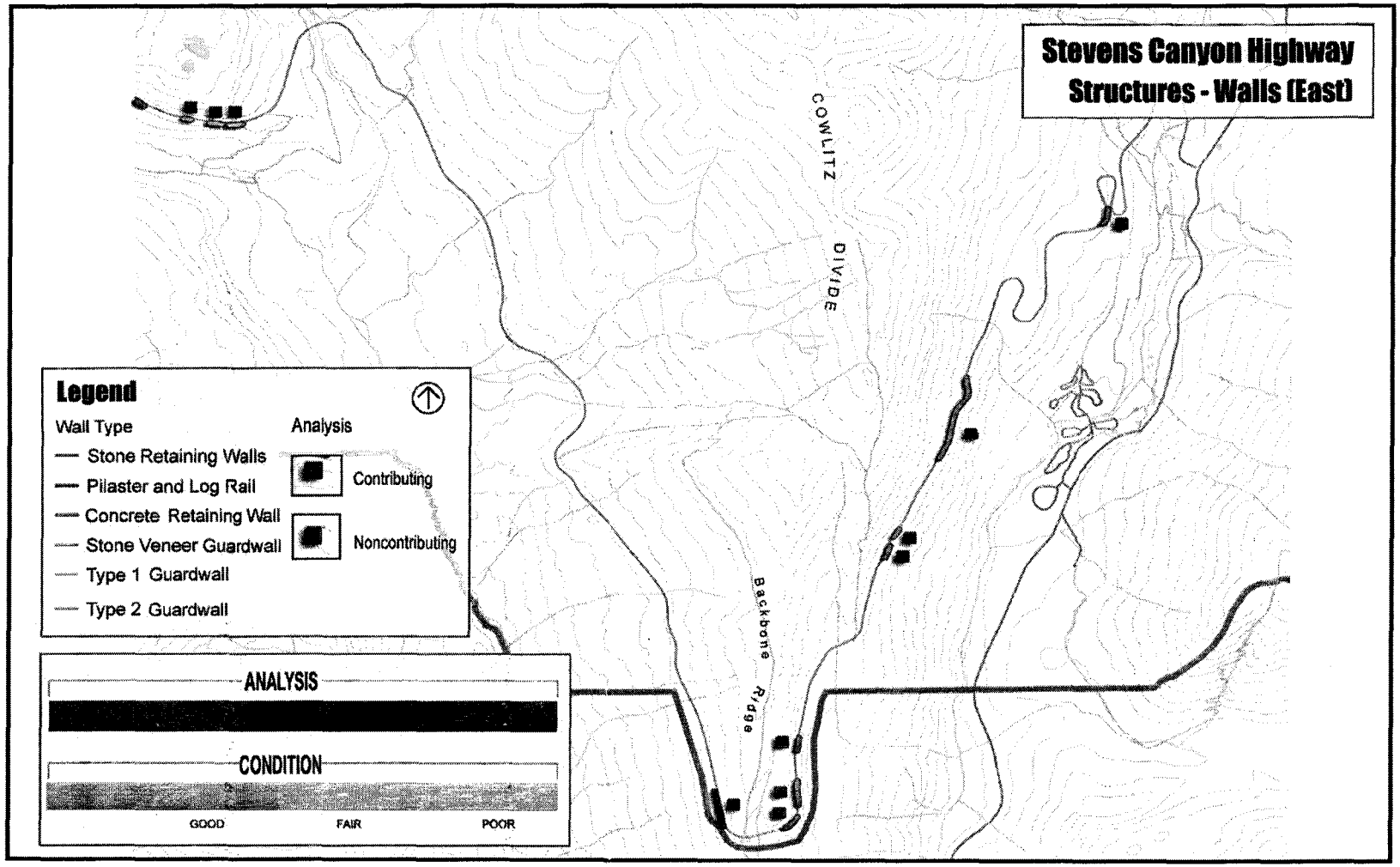
Feature ID	Feature Name	Contributing	Compatible	Length (in feet)	Type
MP06.920	Tunnel	Yes			Stevens Canyon Tunnel
MP08.532	Tunnel	Yes			Box Canyon tunnel
MP04.802	Bridge	Yes		200	Stevens Creek Bridge
MP08.580	Bridge	Yes			Box Canyon Muddy Fork Bridge
MP09.164	Bridge	Yes			Nickel Creek Bridge
MP18.472	Bridge	No	No	142	Falls Creek Bridge
MP18.808	Bridge	No	No	183	Ohanapecosh River Bridge
MP06.336	Viaduct	Yes		227	Type 1
MP06.390	Viaduct	Yes		250	Type 1
MP06.876	Viaduct	Yes		218	Type 1
MP06.974	Viaduct	Yes		338	Type 1
MP13.566	Viaduct	Yes		316	Type 1
MP15.120	Viaduct	Yes		368	Type 2
MP00.330	Guard and Retaining Wall	Yes		1947	Type 2
MP00.620	Guard and Retaining Wall	Yes		265	Type 1A
MP01.302	Guard and Retaining Wall	Yes		442	Type 1D
MP01.478	Guard and Retaining Wall	Yes		270	Type 1D
MP05.500	Guard and Retaining Wall	Yes		212	Type 2
MP05.862	Guard and Retaining Wall	Yes		25	Type 1A

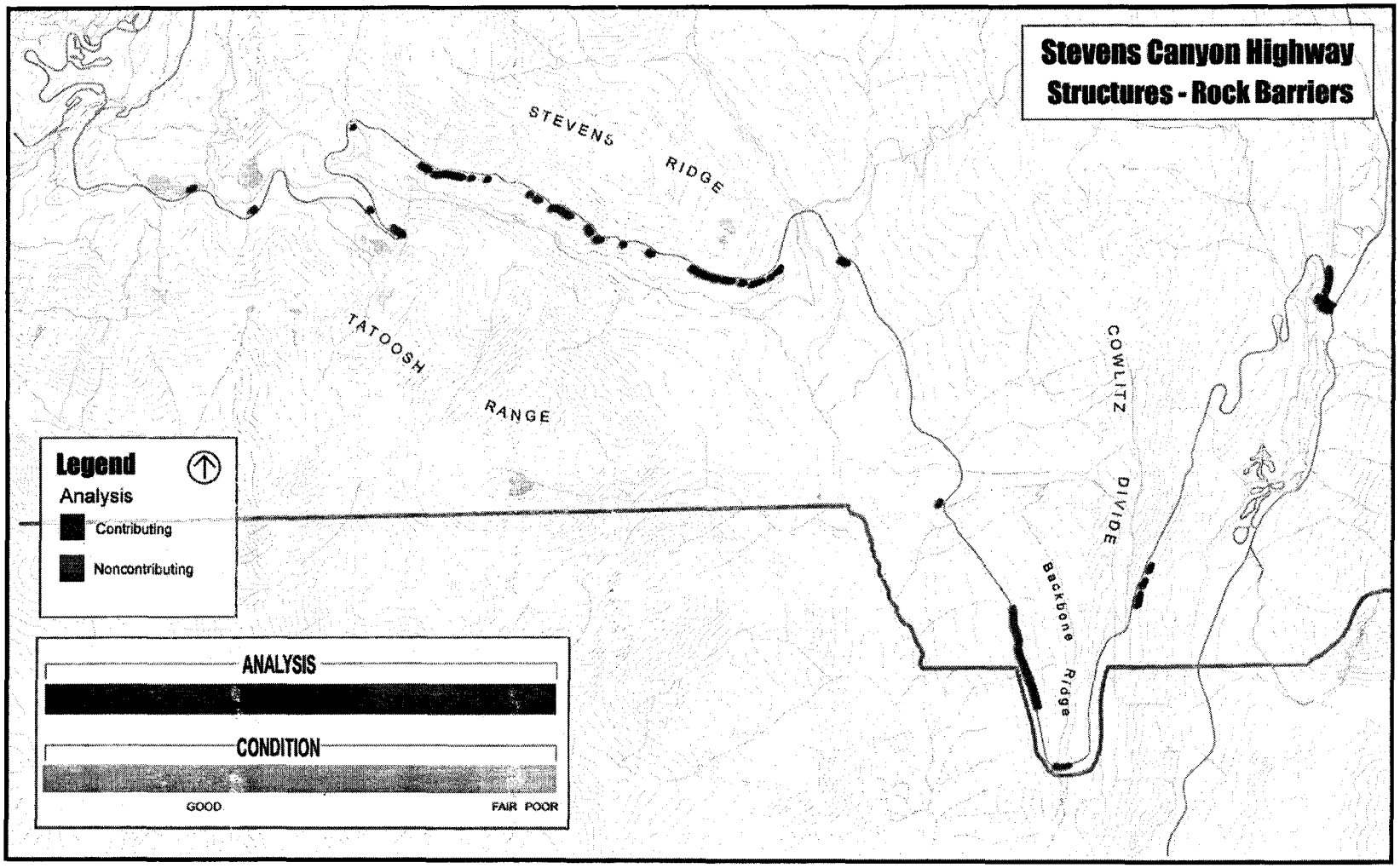
MP06.648	Guard and Retaining Wall	Yes		208	Type 1A
MP06.710	Guard and Retaining Wall	Yes		144	Type 1A
MP06.792	Guard and Retaining Wall	Yes		271	Type 1A
MP07.046	Guard and Retaining Wall	Yes		1000	Type 2
MP07.266	Guard and Retaining Wall	Yes		494	Type 2
MP07.368	Guard and Retaining Wall	Yes		460	Type 2
MP07.484	Guard and Retaining Wall	Yes		330	Type 2
MP07.768	Guard and Retaining Wall	Yes		147	Type 1A
MP07.874	Guard and Retaining Wall	Yes		268	Type 1A
MP07.950	Guard and Retaining Wall	Yes		303	Type 1A
MP13.886	Guard and Retaining Wall	Yes		329	Type 2
MP14.928	Guard and Retaining Wall	Yes		329	Type 2
MP15.034	Guard and Retaining Wall	Yes		227	Type 2
MP15.458	Guard and Retaining Wall	Yes		2220	Type 2
MP17.360	Guard and Retaining Wall	Yes		385	Type 2
MP07.546	Guard and Retaining Wall	No	No	193	Reinforced Concrete
MP13.498	Guard and Retaining Wall	No	No	375	Modern Stone Veneer
MP13.624	Guard and Retaining Wall	No	No	600	Modern Stone Veneer
MP00.334	Retaining Wall	Yes		550	Mortared
MP00.454	Retaining Wall	Yes		375	Mortared
MP03.616	Retaining Wall	Yes		120	Mortared
MP07.550	Retaining Wall	Yes		28	Dry-laid
MP07.558	Retaining Wall	Yes		34	Dry-laid
MP03.318	Retaining Wall	No	Yes	72	Dry-laid
MP06.756	Retaining Wall	No	Yes	55	Dry-laid
MP06.439	Rock Barrier	Yes		260	Linear/Turnout
MP06.840	Rock Barrier	Yes		194	Linear/Turnout
MP07.033	Rock Barrier	Yes		48	Linear/Turnout
MP07.238	Rock Barrier	Yes		100	Linear/Turnout
MP07.572	Rock Barrier	Yes		112	Linear/Slope
MP07.626	Rock Barrier	Yes		600	Linear/Slope
MP07.812	Rock Barrier	Yes		300	Linear/Slope
MP07.812	Rock Barrier	Yes		300	Linear/Slope
MP07.928	Rock Barrier	Yes		100	Linear/Slope
MP08.008	Rock Barrier	Yes		300	Linear/Slope
MP08.128	Rock Barrier	Yes		42	Random/Turnout
MP08.134	Rock Barrier	Yes		300	Linear/Turnout
MP09.110	Rock Barrier	Yes		237	Linear/Turnout
MP11.202	Rock Barrier	Yes		100	Linear/Turnout
MP12.072	Rock Barrier	Yes		250	Linear/Turnout
MP12.342	Rock Barrier	Yes		150	Linear/Turnout
MP14.770	Rock Barrier	Yes		800	Linear/Slope
MP14.894	Rock Barrier	Yes		500	Linear/Slope
MP14.999	Rock Barrier	Yes		100	Linear/Slope
MP18.660	Rock Barrier	Yes		120	Linear/Turnout
MP18.758	Rock Barrier	Yes		100	Linear/Turnout
MP18.878	Rock Barrier	Yes		120	Random/Entrance Station

MP18.880	Rock Barrier	Yes		300	Random/Entrance Station
MP18.912	Rock Barrier	Yes		374	Random/Entrance Station
MP18.968	Rock Barrier	Yes		140	Random/Entrance Station
MP01.632	Rock Barrier	No	No	108	Unrecessed linear/Turnout
MP02.118	Rock Barrier	No	No	52	Unrecessed linear /Turnout
MP03.302	Rock Barrier	No	No	70	Unrecessed linear /Slope
MP03.618	Rock Barrier	No	No	352	Unrecessed linear /Turnout
MP03.988	Rock Barrier	No	No	4	Unrecessed isolated/Turnout
MP04.800	Rock Barrier	No	No	20	Unrecessed linear /Turnout
MP05.432	Rock Barrier	No	No	50	Unrecessed linear /Slope
MP05.464	Rock Barrier	No	No	185	Unrecessed linear /Turnout
MP05.540	Rock Barrier	No	No	1080	Unrecessed linear /Turnout
MP05.788	Rock Barrier	No	No	84	Unrecessed linear /Slope
MP05.916	Rock Barrier	No	No	12	Unrecessed isolated/Guardwall
MP06.252	Rock Barrier	No	No	28	Unrecessed linear /Turnout
MP06.310	Rock Barrier	No	No	62	Unrecessed linear /Turnout
MP06.518	Rock Barrier	No	No	380	Unrecessed random/Turnout
MP06.740	Rock Barrier	No	No	270	Unrecessed linear /Slope
MP13.310	Rock Barrier	No	No	120	Unrecessed linear /Turnout
MP18.708	Rock Barrier	No	No	30	Unrecessed linear /Turnout
MP01.394	Stone Pilaster and wood rail	No	No	416	Modern Pilaster and Wood Rail
MP13.040	Stone Pilaster and wood rail	No	No	907	Modern Pilaster and Wood Rail
MP18.886	Structure	No	No		Stevens Canyon Entrance Station
MP08.142	Structure	No	No		Stevens Creek Trailhead Comfort Station
MP08.674	Structure	No	No		Box Canyon Comfort Station
MP18.712	Structure	No	No		Grove of the Patriarchs Comfort Station
MP08.652	Structure	No	No		Box Canyon Exhibit Shelter


Stevens Canyon Highway
Major Structures
STEVENS
RIDGE
TATOOSH
RANGE
COWLITZ
DIVIDE
Backbone Ridge
Legend
Feature Type
Bridge
Viaduct
Tunnel
Building
Interpretative Shelter
Analysis
Contributing
Noncontributing
Condition
G - Good
F - Fair
P - Poor
ANALYSIS
CONDITION
68%
26%
6%
GOOD
FAIR
POOR


Stevens Canyon Highway
Structures - Walls (West)
COWLITZ DIVIDE
Backbone Ridge
Legend
Wall Type
Stone Retaining Walls
Pilaster and Log Rail
Concrete Retaining Wall
Stone Veneer Guardwall
Type 1 Guardwall
Type 2 Guardwall
Analysis
Contributing
Noncontributing
ANALYSIS
CONDITION
GOOD
FAIR
POOR


Stevens Canyon Highway
Structures - Walls (East)
COWLITZ
DIVIDE
Backbone
Ridge
Legend
Wall Type
Stone Retaining Walls
Pilaster and Log Rail
Concrete Retaining Wall
Stone Veneer Guardwall
Type 1 Guardwall
Type 2 Guardwall
Analysis
Contributing
Noncontributing
ANALYSIS
CONDITION
GOOD
FAIR
POOR


Stevens Canyon Highway
Structures - Rock Barriers
STEVENS
RIDGE
TATOOSH
RANGE
COWLITZ
DIVIDE
Backbone
Ridge
Legend
Analysis
Contributing
Noncontributing
ANALYSIS
CONDITION
GOOD
FAIR POOR

4. Land Use

Historic land use patterns of the road design are still evident and effective today. The Stevens Canyon Highway was conceived primarily as a scenic park highway, but also functioned as a destination for visitors and a principle route through the park. The intended use as a scenic park highway is evident in the geometry of the road which choreographs an intimate experience of park scenery, and in the many rustic and naturalistic features of the road, which add to the scenic qualities of the visitor experience. Stevens Canyon highway was also designed as a destination for visitors, and this intended use is evident in the numerous developed areas and trailheads created along the road, that provide recreational and interpretative opportunities in the southern area of the park. The roads function as a principal transportation route was conceived secondarily to the other designed uses. The lower importance placed upon transportation as a use, is evident in the slower design speed, narrow, curvilinear alignment and indirect route. The roads primary designed uses are well preserved and are key to the historic character and significance of the road.

5. Topography

This landscape characteristic refers to the manipulation of topography that occurred during the building of Stevens Canyon Highway, that is still evident today. The manipulation of natural topography is evident along the entire length of Stevens Canyon Highway corridor. Beginning in the Paradise Valley and ending at East Side Highway, Stevens Canyon Highway traverses some of the most rugged terrain found within the park. Shallow soils and precipitous slopes encountered along the road required extensive blasting and excavation of bedrock in order to establish the bench of the road. Achieving an average grade of six percent over the rugged terrain was a major feat of engineering. In addition, the design and construction of the road called for considerable topographic alterations. A substantial effort was made to minimize the visual impact of topographic manipulation by blending the highway's bench with its surrounding environment.

The road still follows the same alignment as when it was opened in 1957. The manipulation of topography along Stevens Canyon Highway is evidenced in the constructed features of rock cuts, cut/fill and berms. These topographic features contribute to the significance of Stevens Canyon Highway, and are described in more detail in the following paragraphs.

Rock Cuts

Rock cuts are rock faces or cliffs of varying heights and lengths crafted through the cutting of the road bench within a cross-slope. In keeping with NPS naturalistic design principles between WWI and WWII, masons worked on the features ensuring the road's rock cuts blended with the surrounding landscape. There are three predominant segments where rock cuts occur along Stevens Canyon Highway; on the exposed north slopes of Stevens Canyon, below both sides of Backbone Ridge, and at the switchbacks west of the Ohanapecosh River. These rock cuts display a high level of craftsmanship in their form and enhance the naturalistic character of the road. The Stevens Canyon segment is defined by tall vertical rock cuts that are up to a half of a mile in length. The towering, sun-bleached rock faces along this segment reveal the layers of intrusions and sedimentation that comprise the geologic history of the mountain. Sections of the rock cuts overhang the road, highlighting the dramatic setting for this segment, especially where the road appears carved into the cliff face.

The Backbone Ridge area has a series of distinctive rock cuts that are characterized by their large size and battered form. These rock cuts step-back, or lean diagonally away from the road, as they ascend. They also have ledges and niches that have become populated by vegetation and wildlife. The crown of the battered rock cuts has been rounded to dissipate water, minimize erosion, and provide a bench for the growth of vegetation. Stevens Canyon Highway passes through a series of unique, double-sided rock cuts as it descends Backbone Ridge toward the Ohanapecosh River. The double-sided rock cuts are where the road bench is cut into bedrock leaving exposed rock faces on both sides. The resulting rock cuts create an enclosed corridor through which the road passes. Generally, the rock cuts in this east segment are battered and partially covered with vegetation.

Where rock cuts corresponded with natural drainage and creeks, the road-builders created waterfalls and sculpted creek beds to convey the water in an aesthetically pleasing way and provide points of interest for motorists. The waterfalls were carved into the rock following naturalistic and picturesque design principles, resulting in features that are nearly indistinguishable from natural waterfalls. While each waterfall is unique, differing stylistically and structurally from the others on the road, certain principles were used to guide the design of the waterfalls with almost formulaic consistency. At the top of each waterfall, the water was channelized into a 2- to 8-inch channel using a cut or gap in the rocks. Often the water was divided into two channels, with most of the water directed to the main channel and the remaining water into the other. The water then cascaded over a sheer drop of a few inches to several feet before splashing onto ledges, being collected into small pools, and channelized into another cascade. This pattern of cascade, splash ledge, and pool was often repeated several times in one waterfall, with the water being divided and rejoined as it made its way down the rock face. When viewed from the front, the paths of the water zigzag down the rock face, with each cascade offset from the last. The waterfalls range in size from small fingers that splash down next to the road to multi-channeled falls that tumble tens of feet over the rock cuts. The larger waterfalls were carved into the hillside, creating a sort of grotto and allowing water and debris room to collect before entering the culverts. These typically are associated with turnouts, providing a place for visitors to pause to view them.

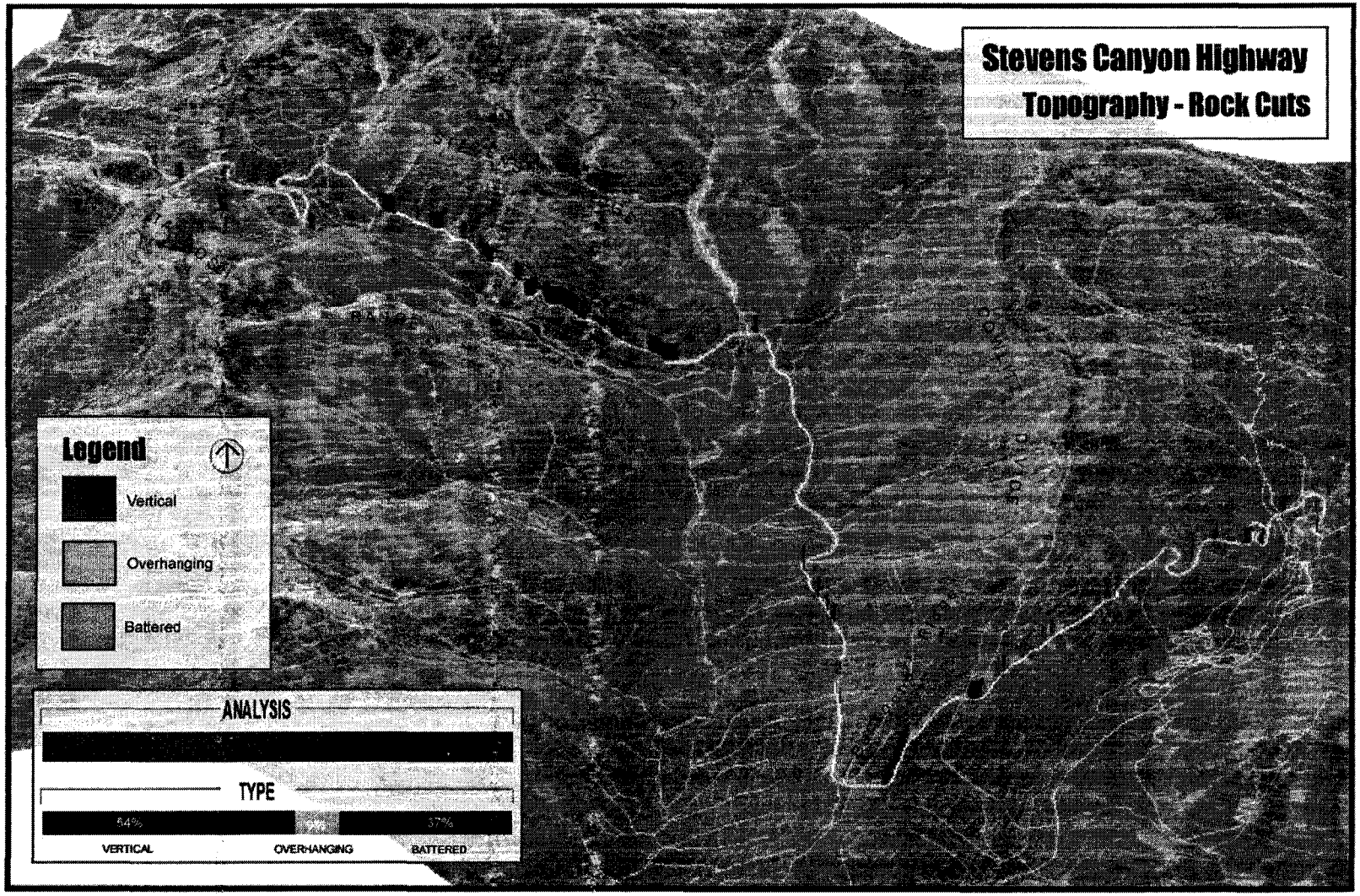
The rock cuts can be classified according to their form. The majority of rock cuts have a near vertical face and there are a total of twenty-six, mostly located along the north side of Stevens Canyon. Additionally, there are fifteen battered rock cuts, three of which include overhangs. Three rock cuts channel small creeks down their face in a naturalistic style that makes it hard to distinguish the natural creeks from the built water features. Overall, the rock cuts are a major component of the naturalistic character of the road. The forty-four historic rock cuts retain a high level of integrity and contribute to the significance of Stevens Canyon Highway

Cut/Fill and Berms

Cuts and fills are a integral part of the geometry of an engineered road and are found along the entire length of Stevens Canyon Highway. A typical cross-section of the road features a cut side travel lane that is etched into the hillside, while the extracted material was used in equal proportion as fill to create the outside travel lane. The combination of these two elements create the bench that constitutes the structure of the highway. During the excavation of large rock cuts, a disproportionate amount of fill material was generated from road excavation, and this material was often formed into berms or used for the construction of turnouts along the fill side of the roadway. Berms were constructed as an alternative to guardwalls and rock barriers as a protective barrier between the road bench and the canyon below. These berms were then planted with native vegetation and were utilized as a naturalistic design element along the road corridor. The wetlands and rock formations to the east of the Cowlitz Divide required the construction of fill-through road segments. The fill-through segments formed an earthen bridge over the landscape. The excess of material required for the fill-through required material to be brought in from elsewhere. The fill-through segments helped to achieve a maximum grade of six percent through a series of switchbacks for safe travel over difficult terrain. The rock cuts, cuts and fills and berms retain high integrity and contribute to the significance of Stevens Canyon Highway.

Table showing topographic features for the Stevens Canyon Highway

Feature ID	Feature Name	Contributing	Condition	Length	Height	Type
MP00.228	Rock Cut	Yes	Good	85	15	Battered
MP01.196	Rock Cut	Yes	Good	182	30	Battered
MP02.118	Rock Cut	Yes	Good	233	35	Vertical/Creek
MP02.564	Rock Cut	Yes	Good	89	18	Battered
MP03.572	Rock Cut	Yes	Good	192	40	Vertical
MP05.464	Rock Cut	Yes	Good	855	50	Vertical/Creek
MP05.864	Rock Cut	Yes	Good	466	60	Vertical/Overhang
MP06.122	Rock Cut	Yes	Good	220	80	Battered
MP06.302	Rock Cut	Yes	Good	821	60	Vertical/Double Sided
MP06.650	Rock Cut	Yes	Good	457	25	Vertical
MP06.834	Rock Cut	Yes	Good	781	50	Vertical/Overhang
MP06.972	Rock Cut	Yes	Good	1712	75	Vertical/Overhang
MP07.308	Rock Cut	Yes	Good	182	20	Vertical
MP07.394	Rock Cut	Yes	Good	34	15	Vertical/Creek
MP07.430	Rock Cut	Yes	Good	331	30	Vertical
MP07.552	Rock Cut	Yes	Good	433	60	Vertical
MP07.660	Rock Cut	Yes	Good	800	80	Battered/Overhang
MP07.836	Rock Cut	Yes	Good	1088	45	Vertical
MP08.658	Rock Cut	Yes	Good	172	30	Vertical
MP09.632	Rock Cut	Yes	Good	253	35	Battered
MP11.224	Rock Cut	Yes	Good	268	40	Vertical
MP11.550	Rock Cut	Yes	Good	264	25	Vertical/ Double Sided
MP11.694	Rock Cut	Yes	Good	125	20	Vertical/Double Sided
MP11.798	Rock Cut	Yes	Good	290	40	Vertical/Double Sided
MP12.342	Rock Cut	Yes	Good	197	20	Battered
MP12.466	Rock Cut	Yes	Good	118	20	Battered/Double Sided
MP12.574	Rock Cut	Yes	Good	270	18	Vertical
MP13.536	Rock Cut	Yes	Good	2000	60	Vertical/Overhang
MP14.468	Rock Cut	Yes	Good	215	20	Vertical/Double Sided
MP14.734	Rock Cut	Yes	Good	190	25	Battered
MP14.784	Rock Cut	Yes	Good	420	50	Overhang
MP14.962	Rock Cut	Yes	Good	1144	50	Overhang
MP15.144	Rock Cut	Yes	Good	270	35	Battered
MP15.218	Rock Cut	Yes	Good	312	30	Battered
MP15.636	Rock Cut	Yes	Good	209	50	Overhang
MP15.730	Rock Cut	Yes	Good	280	40	Battered
MP15.870	Rock Cut	Yes	Good	706	35	Battered/Overhang
MP16.572	Rock Cut	Yes	Good	150	27	Battered
MP16.828	Rock Cut	Yes	Good	648	20	Battered
MP17.162	Rock Cut	Yes	Good	83	30	Vertical/Double Sided
MP17.334	Rock Cut	Yes	Good	305	20	Vertical/Double Sided
MP17.852	Rock Cut	Yes	Good	118	25	Vertical/Double Sided
MP18.234	Rock Cut	Yes	Good	213	40	Vertical
MP18.886	Rock Cut	Yes	Good	100	23	Vertical


Stevens Canyon Highway
Topography - Rock Cuts
Legend
Vertical
Overhanging
Battered
ANALYSIS
TYPE
44%
37%
VERTICAL
OVERHANGING
BATTERED

6. Vegetation

The Stevens Canyon Highway travels through a diverse range of forest associations from the intersection with Nisqually Road to the Stevens Canyon Entrance Station. The combined effects of elevation, slope, topography and aspect all contribute to the overall pattern of vegetation found along the road. The road travels through the subalpine, montane and lowland vegetation zones and a diverse array of species is evident within each of these. A mix of subalpine fir and Mountain hemlock characterize the subalpine zone, in the montane zone Mountain hemlock and Silver fir predominate, while tree species in the lowland zone include Douglas fir, Western hemlock, Western Red Cedar, Red alder, and Cottonwood.

The vegetation is not only characterized by relationships between natural limiting factors, but also through the careful manipulation of the landscape during construction of the road. During construction of the road in the 1930s, NPS design specifications called for preservation of individual specimens or small groupings of trees. Many of these trees are still present today along the roadside and tend to have a large diameter, between 18" and 40". The specimen trees are generally located on the shoulder of the road or on a fill slope. They are occasionally located adjacent to turnouts. Specimen trees are an important aspect of the historic character of the road and they contribute to the significance of Stevens Canyon Highway.

Subalpine Segment: MP 0.0 - 3.5

The Subalpine segment of Stevens Canyon Highway begins one-half mile west of Inspiration Point and ends one mile east of Louise Lake. This portion of the road is aligned primarily within the subalpine vegetation zone, although the road transitions through the ecotone between subalpine and montane. The overall pattern of vegetation is characterized by subalpine forest dominated by Mountain hemlock, White fir, Pacific silver fir, and Subalpine Fir.

Specimen Trees: As the road travels east from the intersection of Paradise Road towards Inspiration Point there are several large specimen trees and tree groupings along the fill slopes bordering the turnout at Inspiration Point. Of particular significance are three specimen trees located along a very steep slope that were originally aligned along the original road to Paradise from Narada Falls. The trees were protected by the placement of dry-laid stone treewells around the base of the trees. The hand-tooled, chamfered edge and the large dimension of the stones on the upslope side of the tree indicate the treewell was designed to drain water away from the base of the tree thereby preserving the root structure and stability of the fill slope.

At Inspiration Point, several specimen trees associated with the turnout frame the view of Mount Rainier and the Tatoosh Range. The 30" diameter trees are located immediately below the retaining walls on either side of the turnout. This arrangement assists in directing views of Mount Rainier to the north and the Tatoosh Range to the southwest. From Inspiration Point the road descends through the subalpine-montane ecotone in a relatively dense corridor of fir and hemlock forest until it reaches the Reflection Lakes area. At Reflection Lakes, the vegetation transitions back into the subalpine forest, in response to the change in aspect and moisture level. In this segment of the road the canopy opens to reveal panoramic views of lakes in the foreground and Mount Rainier as a backdrop. As the road descends to Lake Louise there are two noteworthy

specimen fir trees at the toe of a talus fill slope. These trees buffer the Wonderland trail from the fill scar, as the trail is located immediately below the road in this location.

Stevens Canyon Segment: MP 3.5 - 8.0

As the road winds past Lake Louise and descends into Stevens Canyon, the vegetation transitions from forest into a relatively open, less vegetated slope. The road traverses the slope between large swaths of Sitka alder, a low-growing variety common to disturbed areas and a patchwork forest of firs and cedars. The dominance of Sitka alder here corresponds to seasonal avalanches as well as the historic fire of the 1880s. Unique to this road segment is the pattern of large preserved snags located on the fill slopes that are also remnants of the fire. After the road passes through the hairpin curve and descends towards Stevens Creek, the forest canopy thickens, responding to the decreasing elevation and higher soil moisture content. On the northern side of Stevens Creek Bridge the vegetative pattern is punctuated by rocky avalanche chutes that cut through the surrounding community of Douglas fir, Western Red cedar and Vine maple.

Specimen Trees: The historic trees in this segment tend to be single specimens associated with turnouts and slopes. As the road descends past lake Louise to the switchback on the south side of Stevens Canyon there are two snags on the fills slopes. These are the only two trees on this segment of exposed slope that would otherwise be denuded of any trees. Another example of the variation among specimen trees in Stevens Canyon is the multi-trunk Cottonwood located as the road ascends north of Stevens Creek Bridge. This is one of only a few Cottonwoods seen on this stretch of the road. Perhaps one of the most unique snags along the entire road is located on the east side of the Stevens Tunnel at the base of a dry laid retaining wall.

Backbone Ridge Segment: MP 8.0 - 16.3

The west side of the Backbone Ridge segment is characterized by a dense lowland forest canopy of Douglas fir, Western hemlock, and Western Red Cedar, with pockets of Red alder associated along creek drainages. As the road ascends from Box Canyon there are few openings in the forest due to the greater density of the understory and overall canopy layer. This segment include relatively young trees growing on designed berms on the fill slope.

Generally, on the west side of Backbone Ridge the road is enclosed by vegetation. However, on the east side the canopy opens up and the forest is primarily composed of even-age Douglas fir. The south end of Backbone Ridge marks the transition to the eastside of the road where the tree canopy is less uniform and often distributed along the edges of steep talus slopes formed beneath long sections of vertical rock cuts.

Specimen Trees: The specimen trees along this segment of the Stevens Canyon Highway are primarily associated with turnouts and the shoulder of the road. Within the matrix of the forest canopy there are several groupings of mature, large-diameter Douglas firs and Western hemlocks located in the shoulder that were preserved during construction in the 1930s. One of the most unique groupings within this segment is located at the Box Canyon developed area. Composed of a grove of large-diameter Red alders, the grouping borders a turnout. The trees appear to be over one hundred years in age which is uncommon for this quick growing, short-lived species. The trees are also distinct because they are located in the center of a developed

area and care was taken to preserve the grouping during construction of the parking area and paths. This segment of the road includes a stone treewell located at the Nickel Creek turnout. The treewell is composed of dry-laid rubble and surrounds a Douglas fir with a 24" diameter. The tree is one of two Douglas firs at the turnout that is located adjacent to the pavement, emphasizing the naturalistic character of this historic turnout.

East of Cowlitz Divide Segment: MP 16.3 - 19.0

The forested switchback segment is defined by late-succession, large-diameter trees located close to the shoulder of the road. The width of the tree trunks and their proximity to the shoulder adds to the sense of enclosure along the road corridor. The vegetation along this segment is relatively undisturbed by fire or other recent natural disturbances and the trees are predominantly Douglas fir, Western hemlock and Western red cedar. The trees here are generally the largest of all the trees along the length of the road; their maturity is reflected in the forest floor that is covered with duff, downed trees, and moss.

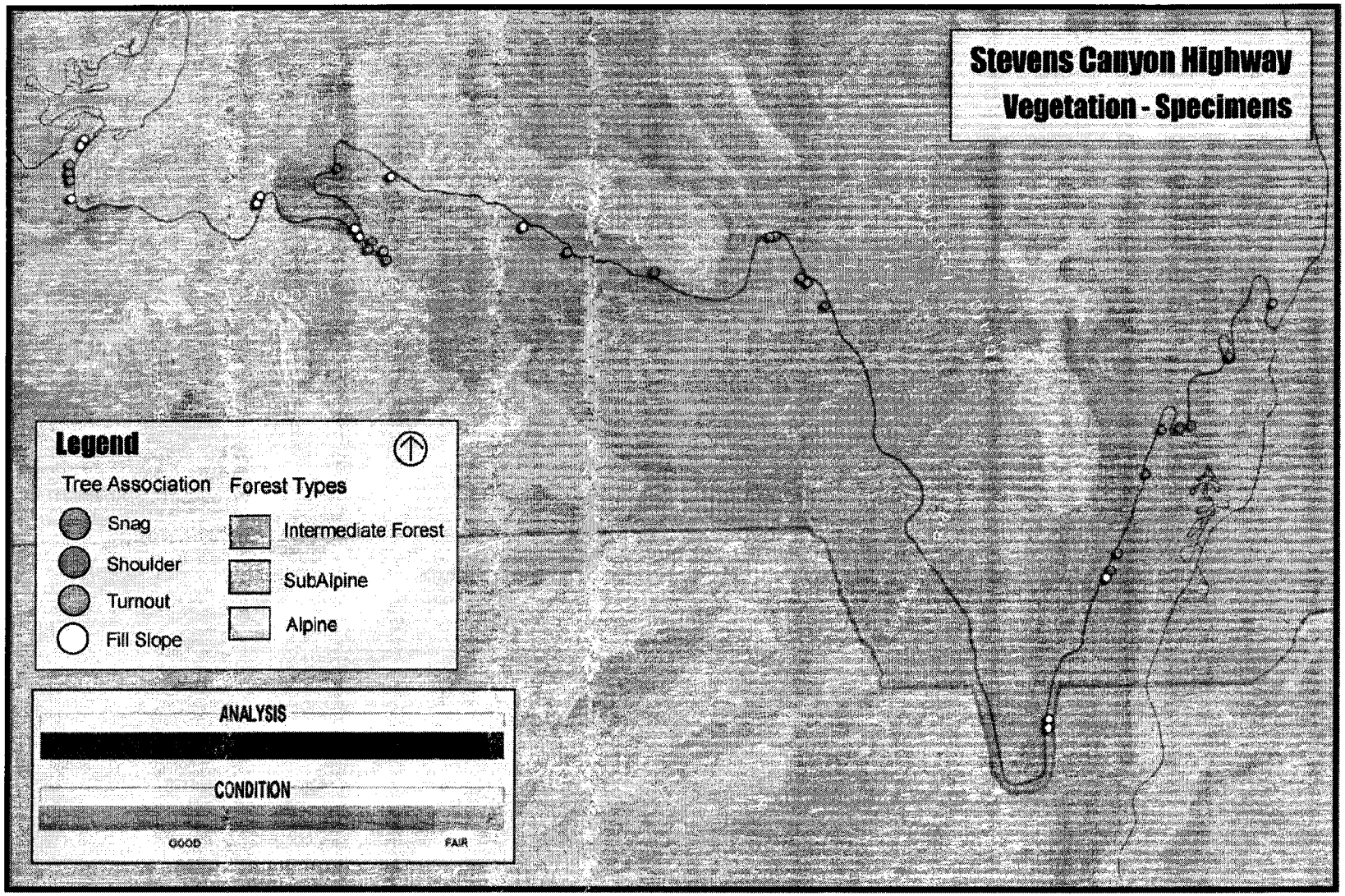
Specimen Trees: The specimen trees along the Forested Switchback segment are large and are comprised of two species, Western hemlock and Douglas fir. These trees often stand out as silhouettes against the vegetation beyond, due to the dimension and size of their trunks. One notable grouping occurs on the southern most switchback. Aligned in a linear fashion, they are only two feet from the paved shoulder of the road. This arrangement is fairly common along this road segment providing a strong sense of enclosure and reflecting the density of forest prior to construction of the road. As the road descends through dramatic switchbacks, the specimen trees up to 40" in diameter can be found along the shoulder. The alignment of the road on these curves directly corresponds to the sweeping arc of trees bordering the shoulder. The final specimen at the eastern end of the road is a Douglas fir located next to the trailhead at the Grove of the Patriarchs. This tree stands out beyond the surrounding canopy and is over 42" in diameter, the largest of any specimen tree documented along Steven Canyon Highway. The tree is a landmark for the trailhead and its leaning form contributes to the character of the vegetation at the historic turnout.

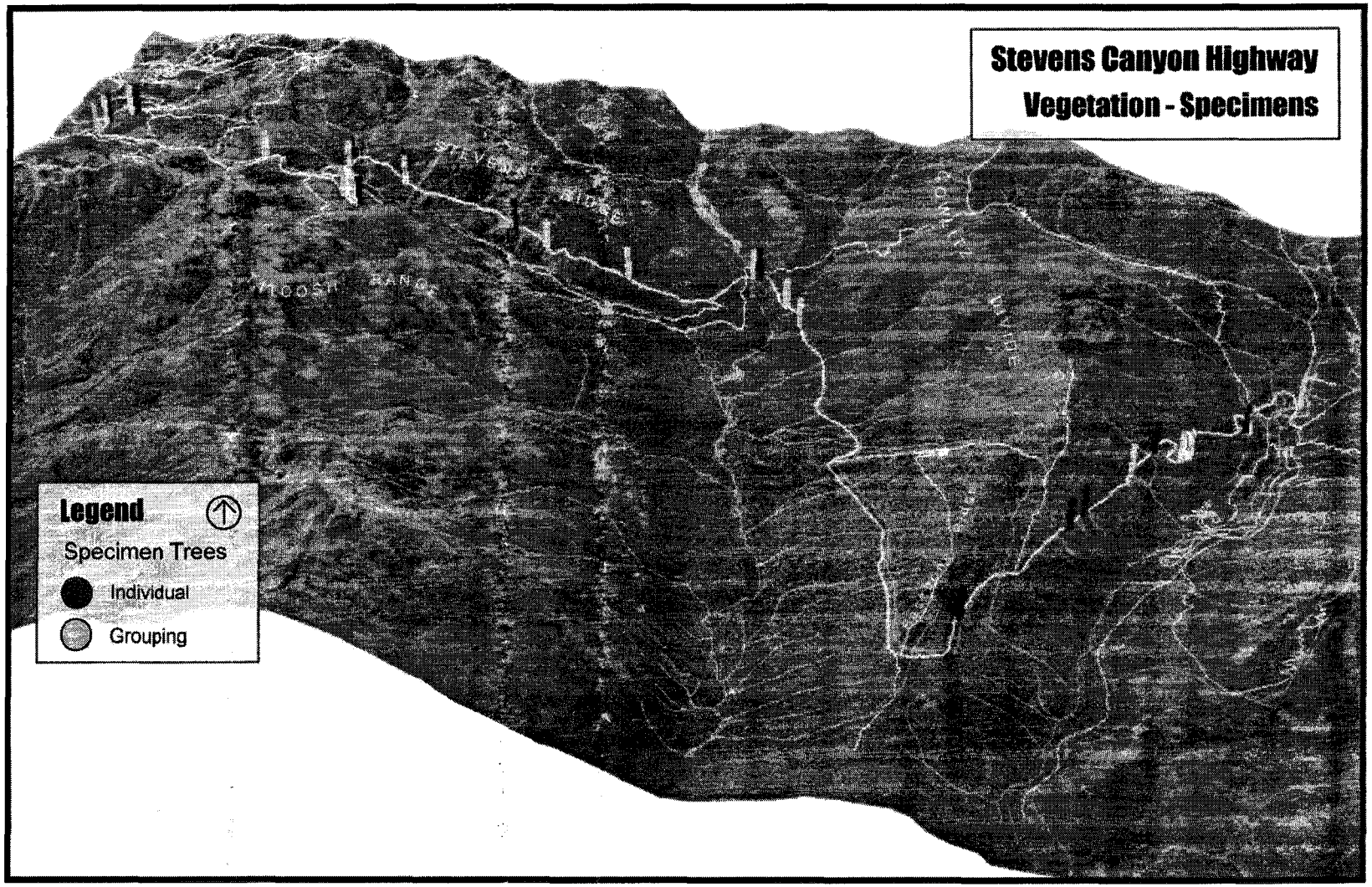
Conclusion

The prevalence of specimen trees along Stevens Canyon Highway is a result of the NPS design intent to enhance the naturalistic characteristic of the road and blend the highway with the natural landscape. The vegetative patterns found along each segment of the road point to the great efforts taken to preserve the natural landscape during construction of the road. As such, the specimen trees are a significant element of the road corridor, retain a high degree of integrity and contribute to the significance of Stevens Canyon Highway.

Table showing specimen trees associated with Stevens Canyon Highway

Feature ID	Feature	Con-tributing	Condit-ion	Species	DBH	Type
MP00.260	Grouping	Yes	Good	Abies lasiocarpa x3	24	Slope/Treewell
MP00.278	Specimen	Yes	Good	Tsuga mertensiana	24	Slope/Treewell
MP00.484	Grouping	Yes	Good	Abies amabilis x2	24	Turnout
MP00.504	Specimen	Yes	Good	Abies procera	30	Turnout
MP00.508	Specimen	Yes	Good	Abies amabilis	30	Turnout
MP00.682	Specimen	Yes	Good	Abies procera	40	Turnout
MP02.400	Specimen	Yes	Good	Abies lasiocarpa	24	Slope
MP02.416	Specimen	Yes	Good	Abies amabilis	30	Slope/Treewell
MP03.356	Specimen	Yes	Good	Abies amabilis	30	Slope
MP03.372	Specimen	Yes	Good	Abies amabilis	30	Slope
MP03.518	Specimen	Yes	Good	Abies amabilis	20	Slope/Snag
MP03.618	Grouping	Yes	Good	Abies lasiocarpa x2	30	Turnout
MP03.634	Specimen	Yes	Good	Pseudotsuga menziesii	20	Turnout
MP03.706	Specimen	Yes	Good	Snag (unknown species)	18	Slope/Snag
MP04.614	Specimen	Yes	Good	Abies amabilis	24	Turnout
MP05.342	Specimen	Yes	Good	Populus trichocarpa	20	Slope
MP06.148	Grouping	Yes	Good	Pseudotsuga menziesii x2	36	Slope
MP06.786	Specimen	Yes	Good	Pseudotsuga menziesii	36	Turnout
MP07.492	Specimen	Yes	Good	Snag (unknown species)	30	Slope/Snag
MP08.624	Specimen	Yes	Good	Pseudotsuga menziesii	30	Turnout
MP08.660	Grouping	Yes	Good	Alnus rubra	26	Turnout
MP09.124	Specimen	Yes	Good	Pseudotsuga menziesii	24	Turnout/Treewell
MP09.134	Specimen	Yes	Fair	Pseudotsuga menziesii	30	Turnout
MP09.398	Grouping	Yes	Good	Tsuga heterophylla	36	Shoulder
MP13.886	Specimen	Yes	Fair	Pseudotsuga menziesii	36	Slope
MP13.910	Grouping	Yes	Good	Pseudotsuga menziesii x3	30	Slope
MP15.098	Grouping	Yes	Good	Pseudotsuga menziesii x5	30	Shoulder
MP15.118	Grouping	Yes	Good	Pseudotsuga menziesii x3	24	Slope
MP15.270	Grouping	Yes	Good	Pseudotsuga menziesii x2	30	Turnout
MP15.888	Specimen	Yes	Good	Pseudotsuga menziesii	30	Shoulder
MP16.220	Grouping	Yes	Good	Pseudotsuga menziesii x4	30	Shoulder
MP16.728	Specimen	Yes	Good	Pseudotsuga menziesii	30	Shoulder
MP16.794	Specimen	Yes	Good	Tsuga heterophylla	30	Shoulder
MP17.820	Grouping	Yes	Good	Pseudotsuga menziesii x4	40	Shoulder
MP18.738	Specimen	Yes	Good	Pseudotsuga menziesii	40	Turnout


Stevens Canyon Highway
Vegetation - Specimens
Legend
Tree Association
Snag
Shoulder
Turnout
Fill Slope
Forest Types
Intermediate Forest
SubAlpine
Alpine
ANALYSIS
CONDITION
GOOD
FAIR


Stevens Canyon Highway
Vegetation - Specimens
Legend
Specimen Trees
Individual
Grouping

7. Views

The extraordinary views enjoyed by visitor to the Stevens Canyon Highway were created by NPS landscape architects in the 1930s through their thoughtful design for the road, particularly in its alignment. Along the length of the highway, the visitor is exposed to spectacular scenery and built features, including peaks, canyons, rock formations, waterfalls, creeks, a range of vegetation types, tunnels, and bridges. Views were designed as part of the sequential experience of the road and leave the traveler "in a keen state of expectancy as to the new pleasures held in store" (Ricksecker, 1932). Three types of view predominate along the highway; framed views, panoramic views, and vistas, which are constrained views directly ahead of the driver. The framed views are often achieved through manipulation of vegetation such as Backbone Ridge and Inspiration Point. The panoramic views are often located at turnouts adjacent to exposed sections of fill slope.

Designed views along Stevens Canyon Highway are evidenced in the design of the road and were often noted in the historical photographs taken during the time of construction. Designed views are often associated with the location of turnouts and developed areas along the highway. These elements coax visitors to stop and take in their surroundings from specific places in the park. Interpretation waysides near Reflection Lake, across the canyon from Martha falls, and at the developed area at Box Canyon are good examples of designed views from turnouts and developed areas. The most direct historic evidence is seen in a photograph from J. Haslett Bells landscape architect report of 1938. The photograph shows Mount Rainier and part of the nearby Tatoosh Range as seen from the tip of Backbone Ridge. The caption reads "The view motorists will get a view of the mountain from the end of Backbone Ridge on the Stevens Canyon Highway." In combination with the field work, historic photographs taken from vantage points along the highway and others that focus on the viewpoints themselves have guided the identification of the major views. However, a detailed study of the views would likely find many more and would probably include more local views of the major built features along the highway. The views along Stevens Canyon Highway are presented by segment as laid out in the spatial organization section of this inventory. They are generally determined by the character of the landscape in relation to the sequential experience of the highway.

Subalpine Segment: MP 0.0 - 3.5

The subalpine segment is characterized by major viewpoints at Inspiration Point, Reflection and Louise Lakes. These points are separated by approximately one mile of road winding through subalpine forest with intermittent views of the Tatoosh Range. The view from Inspiration point is a panorama including the widest view of Mount Rainier found along the Stevens Canyon Highway as well as a sweeping view west to include the paradise Valley and the western peaks of the Tatoosh range. Growth of a group of trees has partially obscured the view to the west but the remainder of the view retains integrity. The viewpoints along Reflection Lakes offer panoramic views of the lake, as well as Mount Rainier. When the water is still the mountain is reflected in the lakes offering a spectacular sight for any visitor. East of Reflection Lakes are filtered views through the forest cover as the highway wraps around Lake Louise before entering the west end of Stevens Canyon.

Stevens Canyon Segment: MP 3.5 - 8.0

This Stevens Canyon segment offers the most dramatic views along the highway extending from east of Lake Louise to the Stevens Creek trailhead. Entering the canyon from the west after passing Lake Louise, the highway turns east skirting a ridge, providing visitors their first view of Stevens Canyon stretching out before them to the east. From here there is a view of the highway lies ahead as it descends towards Stevens Creek before traversing the north face of the canyon. Descending the south face of the canyon there is a switchback turn with a turnout where the alignment of the road presents visitors with a panoramic view of Mount Rainier and Stevens Canyon. The north face of the canyon offers motorists traveling in either direction panoramic views of the canyon as well as providing turnouts where visitors are invited to stop and take in the scenery. There are two major views in this section, the first being the west end of Stevens Canyon tunnel. This is the first complete view of the canyon for a visitor traveling in a western direction. The other major view is of the Cowlitz River valley stretching to the south with Mt. Adams in the distance. For visitors traveling west on Stevens Canyon Highway, this is the first truly open panoramic view and spatial experience they will encounter along the road. The views along Stevens Canyon Highway are an integral aspect in defining the character and experience of the highway. Despite a few inevitable minor changes due to growth of vegetation, the integrity of these views is intact. The views contribute to the significance of Stevens Canyon Highway.

Backbone Ridge Segment: MP 8.0 - 16.3

The Backbone Ridge segment is largely forested offering limited filtered views of the surrounding landscape. Extending from the Stevens Creek trailhead to switchbacks in the east side of the Cowlitz Divide, this segment includes views that were designed into the alignment of the highway. The directed views created by the alignment of the road are all seen when traveling west on the highway. These include a series of views experienced when moving between the Backbone Ridge turnout and Nickel Creek Bridge. This series of four views begins on a long straight segment of the highway, providing a glimpse of Mount Rainier's east flank. The highway then turns away from and back toward the mountain three times while continuing its descent. Each successive view provides a more complete view of the mountain, culminating in a dramatic view of the upper reaches of Mount Rainier.

Another major view is east of the Stevens Creek trailhead where the road curves around to the north. After rounding a tangent curve, the highway vegetation frames a view of Unicorn Peak in the Tatoosh Range before opening up to reveal Stevens Canyon below. This segment also includes a composed vista located at Box Canyon. From the turnout a short path leads away to a designed viewing point for observing the Muddy Fork of the Cowlitz River rushing through a deep gorge. The Box Canyon developed area contains numerous local views of the natural and built features including the glacier polished rock, Box Canyon Tunnel and Box Canyon Muddy Fork Bridge.

Other important views are found on either side of Backbone Ridge. To the west, the Backbone Ridge turnout offers the visitor a sweeping panoramic view of Mount Rainier and the eastern peaks of the Tatoosh Range. It is the first view of Mount Rainier for visitors traveling west along the highway. Historically, there were additional views of the Tatoosh Range from the west of the ridge, but they have been obscured due to the re-growth of the forest following the

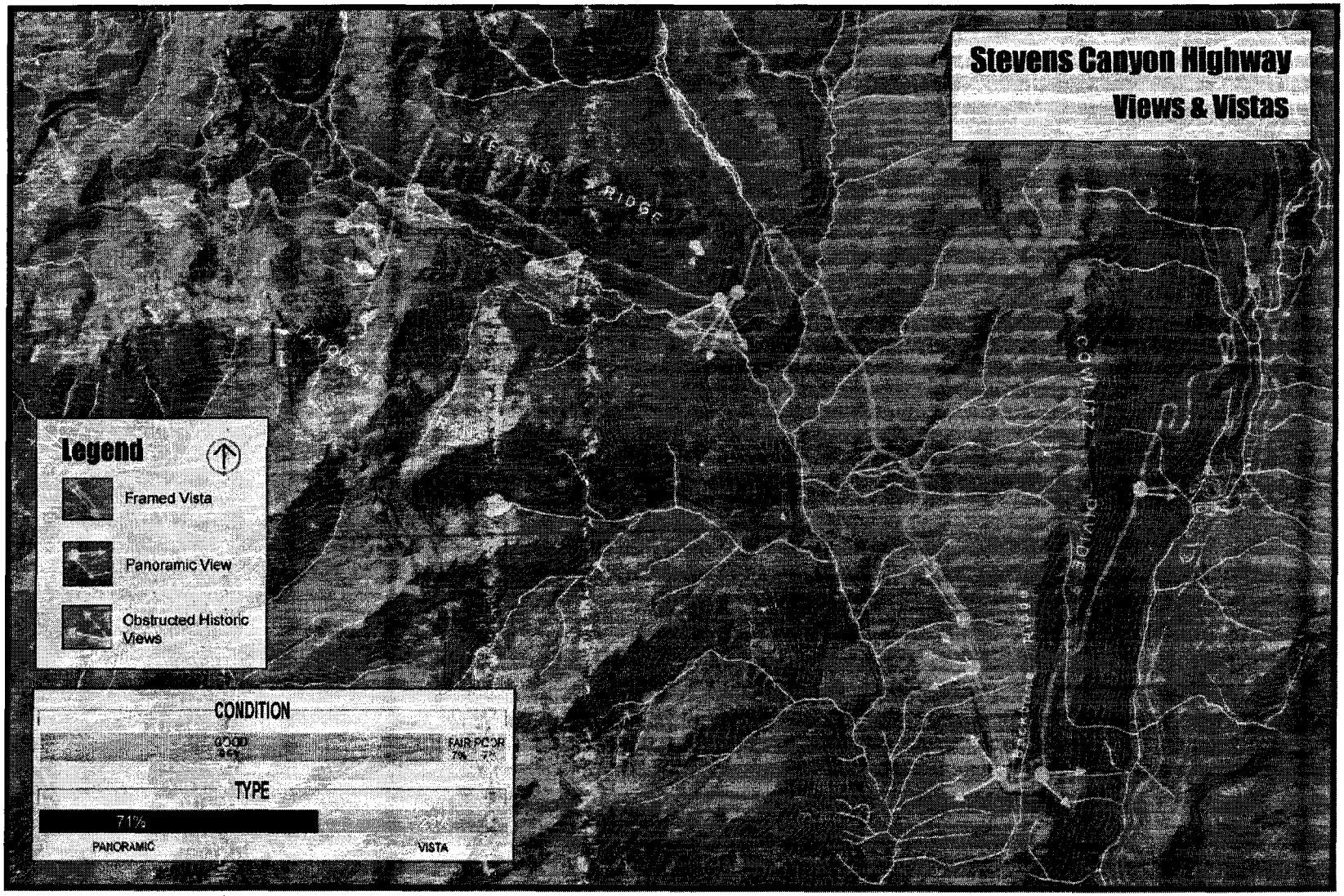
widespread fire in c. 1880. On the east side of the ridge as the highway turns north and begins its descent toward Ohanapecosh, the east-bound visitors receive their first view of the Ohanapecosh River Valley and the surrounding landscape —a series of lush green forested hills and valleys. As visitors continue their descent through this section, they encounter several more openings with views to the south and east divided by enclosed stretches of forest.

Forested Switchback Segment: MP 16.3-19.0

The forested switchback segment leads from the switchbacks below the Cowlitz Divide to the intersection with the Eastside Highway. This segment is characterized by occasional filtered views into the forest. The views ahead along the highway are restricted by the number of curves and switchbacks in this area. The natural features in this segment present composed views at Falls Creek and the Ohanapecosh River. At Falls creek, turnouts are provided for visitors to exit their vehicles and take in the sight of the falls on the north side of the road.

Table showing views associated with Stevens Canyon Highway

Feature ID	Feature Name	Contributing	Condition	Type
MP00.490	Viewpoint	Yes	Good	Panoramic/Turnout
MP01.488	Viewpoint	Yes	Good	Panoramic/Turnout
MP02.632	Viewpoint	Yes	Good	Panoramic/Turnout
MP03.222	Viewpoint	Yes	Good	Panoramic/Road Alignment
MP05.530	Viewpoint	Yes	Good	Panoramic/Turnout
MP06.868	Viewpoint	Yes	Good	Panoramic/Turnout
MP07.994	Viewpoint	Yes	Good	Panoramic/Road Alignment
MP08.138	Viewpoint	Yes	Good	Framed/Road Alignment
MP12.020	Viewpoint	Yes	Good	Framed/Road Alignment
MP12.374	Viewpoint	Yes	Good	Panoramic/Turnout
MP13.154	Viewpoint	Yes	Good	Panoramic/Turnout
MP13.566	Viewpoint	Yes	Good	Panoramic/Road Alignment
MP15.768	Viewpoint	Yes	Good	Framed/Road Alignment
MP18.488	Viewpoint	Yes	Good	Framed/Turnout


Stevens Canyon Highway
Views & Vistas
Legend
Framed Vista
Panoramic View
Obstructed Historic Views
CONDITION
GOOD
FAIR
POOR
TYPE
71%
PANORAMIC
VISTA

8. Small Scale Features

Introduction

Small scale features associated with Stevens Canyon Highway collectively contribute to the function and aesthetic of the road, including culverts with headwalls, rock-lined chutes and water fountains. They were designed and constructed as part of the overall effort to blend the road with the local surroundings. In addition, all materials were designed with a scale appropriate to their context and used native materials where possible. The road retains many of the culverts that were designed and constructed between 1930 and 1957. However, high-elevation winter snow conditions have affected the majority of the original wooden small-scale features and some of the masonry features. In most cases, the historic small-scale features have been replaced with incompatible contemporary features, including the replacement of wooden NPS signs.

Many of the small scale features were designed in the NPS rustic style including the use of native materials and organic forms that blend with the surrounding environs. With the exception of split rail worm fencing and strip drains, the majority of the features retain a high degree of integrity and contribute to the significance of Steven Canyon Highway. The range of historic small scale features along the road are described in more detail in the following paragraphs.

Culverts

There are more than 120 culverts on the Stevens Canyon Highway comprising of four major types; box culverts, culverts with stone headwalls, culverts with stone-faced concrete headwalls, and culverts with concrete headwalls. The culvert pipes fall into two categories; concrete pipe and galvanized steel pipe culverts with diameters between 24" and 48". The culvert types tend to be grouped into geographic areas along the highway. This pattern is most likely related to the construction phases for the highway. A change from stone to concrete type headwalls occurred after WWII.

The majority of the culverts with stone headwalls are located to the east of Box Canyon. Between Box Canyon and Stevens Creek most culverts have been replaced by strip drains. From Stevens Creek to Inspiration Point there is a mix of culverts with concrete and stone-faced headwalls. In addition, two box culverts are located between Louise Lake and Stevens Creek. These culverts have stone-faced headwalls with a reinforced concrete arch structure. The condition of the culverts varies. The majority of those in poor condition are located between Falls Creek and Box Canyon on the lowland segment of the road. Many culverts are silted up and the headwalls have missing stones or are rotating. Although numerous culverts have been altered or replaced, the overall integrity of the culverts is high and they contribute to the significance of Stevens Canyon Highway.

Avalanche Chutes

All six avalanche chutes on the Stevens Canyon Highway are located on the steep south slope of Stevens Canyon at Stevens Ridge. No drawings or written records were found to date these structures. However, this section of the highway was built before road construction was stopped by WWII, and contains some of the earliest examples of NPS design implemented on the

road. The chutes consist of a reinforced concrete sub-base with flat field stones set into the concrete. These stone veneered troughs range from 8-10' in width and extend upslope for 30' or more. At the base of each chute, a large catch basin with a steel grate directs water collected by the chute under the highway to the fill side where it typically disperses down a Type 4 dry-laid rock retaining wall.

The visual impact of these chutes is mitigated by the stone cladding, although the steel grates have to be kept clear in order to be effective and are visible to the motorist. The general condition of the chutes is mixed, due to the extreme loads on the grates and erosion that has undermined some of the concrete sub-base. Despite this, the chutes retain a high degree of integrity and contribute to the significance of Stevens Canyon Highway.

Signs

There are two major park signs along Stevens Canyon Highway; one located at the Steven Canyon Entrance Station and one at Box Canyon. The sign at Box Canyon, which is located on the island separating the parking area from the highway, has rustic elements such as routed lettering on a large wood slab and a stone base. This transitional design was sketched out in 1955 and built by the time the highway opened in 1957. Although the pre-war NPS rustic design called for rough stone and full logs, the Box Canyon sign is still an impressive example of the rustic architectural style albeit slightly modern. The sign at the Stevens Canyon Highway Entrance was designed and installed during the Mission 66 period. Although fabricated of wood with routed letters, the sign has none of the mass and irregularity found in rustic architecture and is a non-contributing structure.

Water Fountains

There are four water fountains on the Stevens Canyon Highway, two at Box Canyon, one at Stevens Creek Trail, and one at the Grove of the Patriarchs. A drawing exists of the fountains at Box Canyon dating them from 1959 (Drawing: NP-RAI/3330). The Grove of the Patriarchs fountain is of similar design but no drawings were found to corroborate the date of construction. The fountains at Grove of the Patriarchs and Box Canyon are rustic-style features that contribute to the significance of Stevens Canyon Highway

Strip Drains

There are fifteen strip drains along the highway, all located between Stevens Creek and Box Canyon. The drains are placed along this steep stretch of highway to direct water away from the face of the sheer rock cliffs and disperse it down the Type 4 fill slope. The drain locations and design are called out in plans drawn during the Mission 66 era. The strip drains do not contribute to the significance of Stevens Canyon Highway

Fences

There are two types of fences on Stevens Canyon Highway- the wood split rail worm fence and metal railing- both are located at Box Canyon. The split rail fence was installed in the late 1950s without a precedent in NPS rustic design. The metal railing is also a modern design. These fences do not contribute to the significance of Stevens Canyon Highway.

Table showing small scale features associated with Stevens Canyon Highway*

Feature ID	Feature Name	Contributing	Compatible	Condition	Length	Type
MP01.464	Culvert	Yes		Good	20	Box Culvert
MP04.516	Culvert	Yes		Good	18	Box Culvert
MP05.256	Avalanche Chute	Yes		Fair	10	Lined Avalanche Chute
MP05.670	Avalanche Chute	Yes		Fair	20	Lined Avalanche Chute
MP05.732	Avalanche Chute	Yes		Fair	20	Lined Avalanche Chute
MP05.852	Avalanche Chute	Yes		Poor	20	Lined Avalanche Chute
MP06.068	Avalanche Chute	Yes		Fair	10	Lined Avalanche Chute
MP06.260	Avalanche Chute	Yes		Poor	25	Lined Avalanche Chute
MP05.442	Strip Drain	No	No	Good	100	Strip Drain
MP05.696	Strip Drain	No	No	Good	25	Strip Drain
MP06.498	Strip Drain	No	No	Good	25	Strip Drain
MP06.538	Strip Drain	No	No	Good	25	Strip Drain
MP06.786	Strip Drain	No	No	Good	25	Strip Drain
MP06.920	Strip Drain	No	No	Good	25	Strip Drain
MP07.240	Strip Drain	No	No	Good	25	Strip Drain
MP07.356	Strip Drain	No	No	Good	25	Strip Drain
MP07.580	Strip Drain	No	No	Good	25	Strip Drain
MP07.670	Strip Drain	No	No	Good	25	Strip Drain
MP07.806	Strip Drain	No	No	Good	25	Strip Drain
MP07.874	Strip Drain	No	No	Good	25	Strip Drain
MP07.950	Strip Drain	No	No	Good	25	Strip Drain
MP08.650	Fence	No	No	Good	-	Split Rail Worm Fence
MP08.665	Fence	No	No	Good	-	Metal Railing

9. Response to Natural Systems and Features

The NPS design objectives of the 1930s are still visible along Stevens Canyon Highway. The entire roadway corridor and its associated features still respond to the natural system and features of the landscape. The overarching design philosophy of the NPS required that the road fit the landscape. Cut and fill was kept to a minimum, and slopes were graded to blend into the surrounding terrain. In areas where the road corridor cut across the face of cliffs and rock slopes, special methods of excavation were developed to minimize scarring. Where steep slopes could not be avoided and construction required a severe cut, an attempt was made to rehabilitate the disturbed area by simulating natural features. For example, rock cuts along the north side of Stevens Canyon that were scarred from dynamiting and drilling were crafted to present the natural stratification of the rock and create naturalistic overhangs. Salvaged stone from cut and fill was used to construct adjacent features, such as retaining walls, guardwalls, rock barriers and berms that further blended the road with its surroundings.

Today, the road corridor retains many of the original turnouts, specimen trees, and rock cuts from the historic period. Historically, turnouts were strongly integrated into the natural landscape and presented views of a variety of spectacular natural features. The retention of vegetation along the road corridor was of particular concern to the park landscape architects. Large specimen trees still stand in the shoulder of the road or on the steep fill slopes. They are an important part of the highway, integrating the road with the surrounding landscape. However, changes to the road since the period of significance have altered the naturalistic design character including the addition of non-contributing rock barriers and the construction of twelve additional turnouts. Periodic landslides have also impacted the historic character of the road. In several places where landslide zones cross the road, the shoulder has been enlarged due to the gradual accumulation of slide material. In spite of these changes, the road as a whole retains its historic character and landscape scale in relation to natural system and many of its original structures, patterns, and other features still blend into the landscape.

Figures for Analysis and Evaluation

Circulation

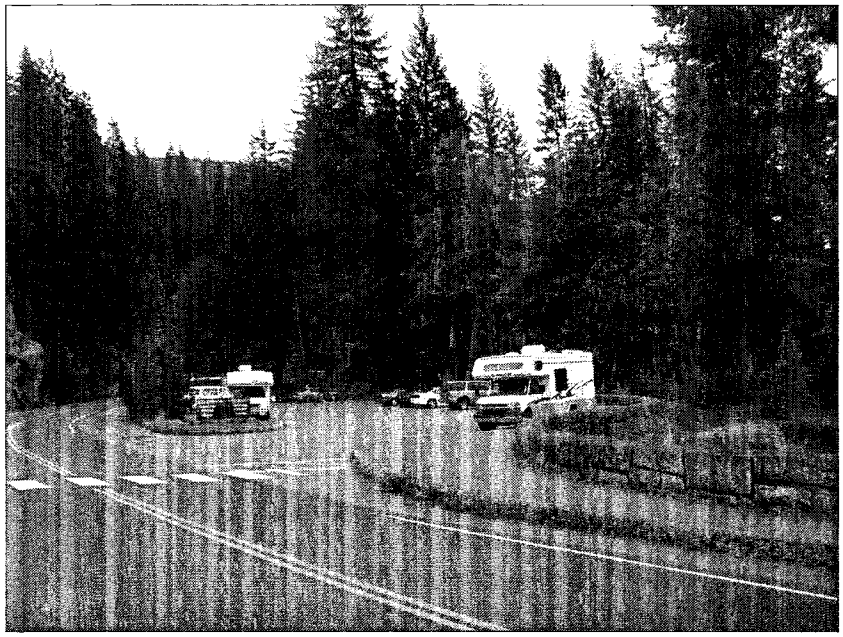


Figure 3.1. Contemporary photo showing contributing turnout at Box Canyon with sidewalk (MORA 2004).

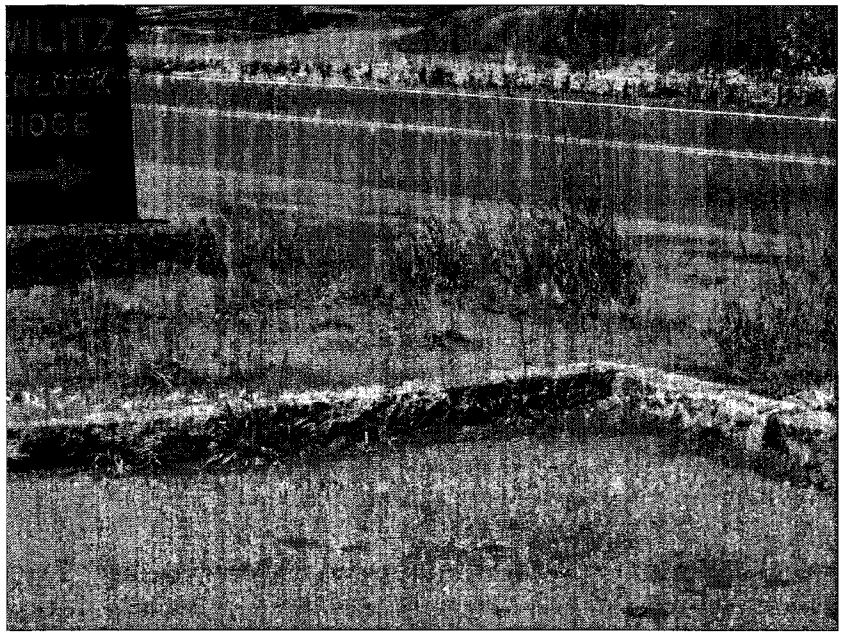


Figure 3.2. Contemporary photo showing contributing granite curb at Box Canyon (MORA 2004).

Figure 3.3. Contemporary photo showing contributing Pinnacle Peak trailhead (MORA 2004).

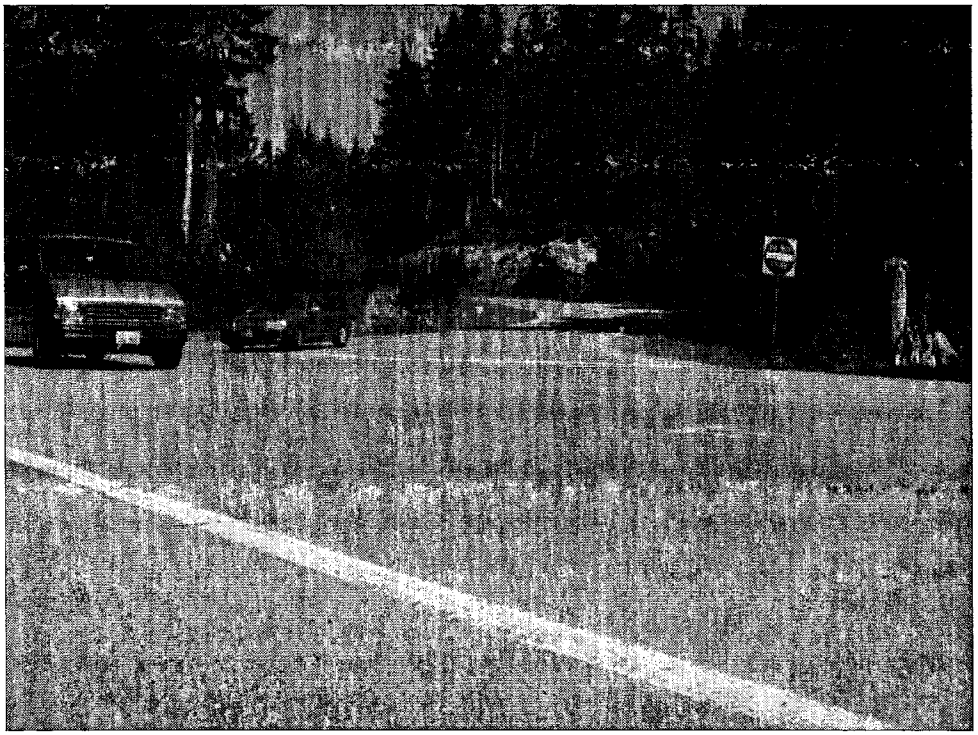


Figure 3.4. Contemporary photo showing non-contributing intersection between Stevens Canyon Highway and Nisqually Road (MORA 2004).

Buildings and Structures

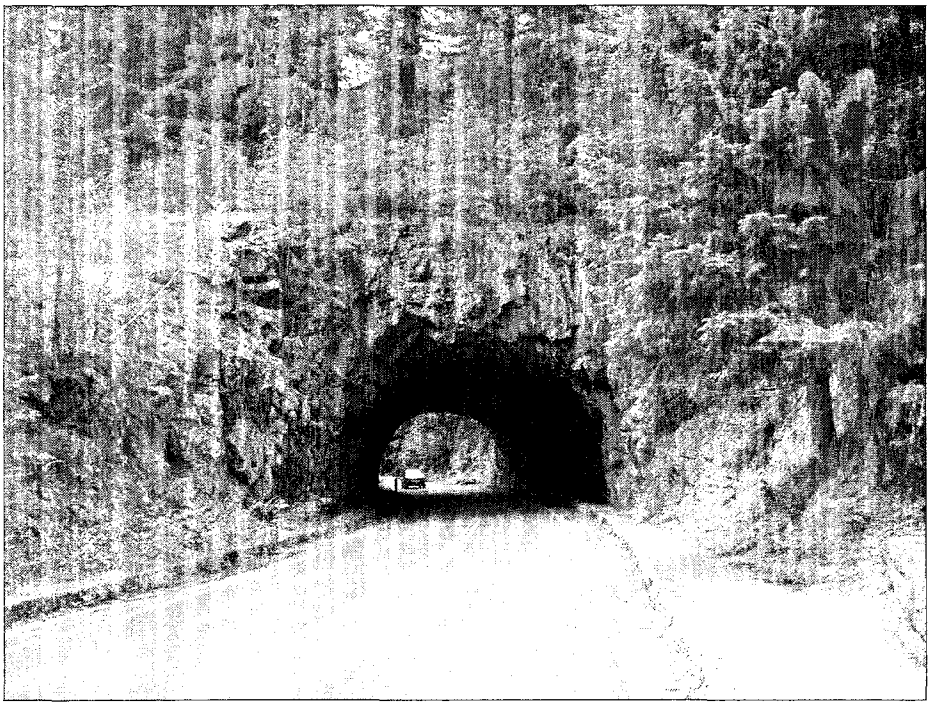


Figure 3.5. Contemporary photo showing contributing Box Canyon Tunnel from the east portal (MORA 2004).

Figure 3.6. Contemporary photo showing contributing Stevens Canyon Tunnel from the west portal and viaduct leading to the tunnel (MORA 2004).

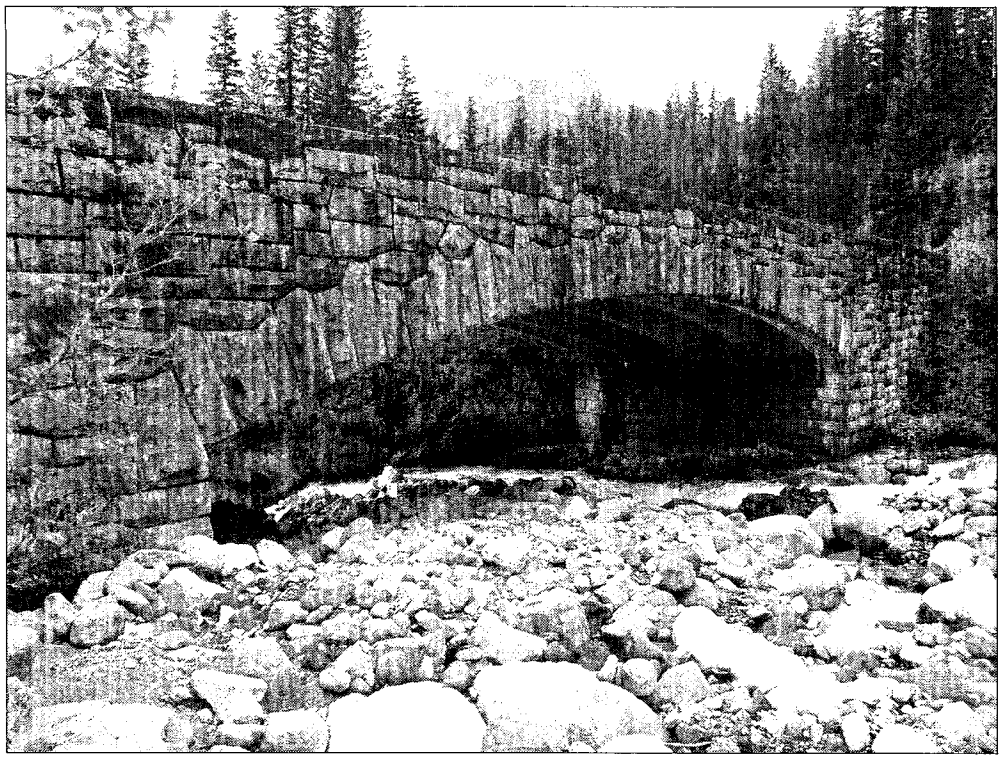


Figure 3.7. Contemporary photo showing contributing Stevens Creek Bridge (MORA 2004).

Figure 3.8. Contemporary photo showing contributing Nickel Creek Bridge (MORA 2004).

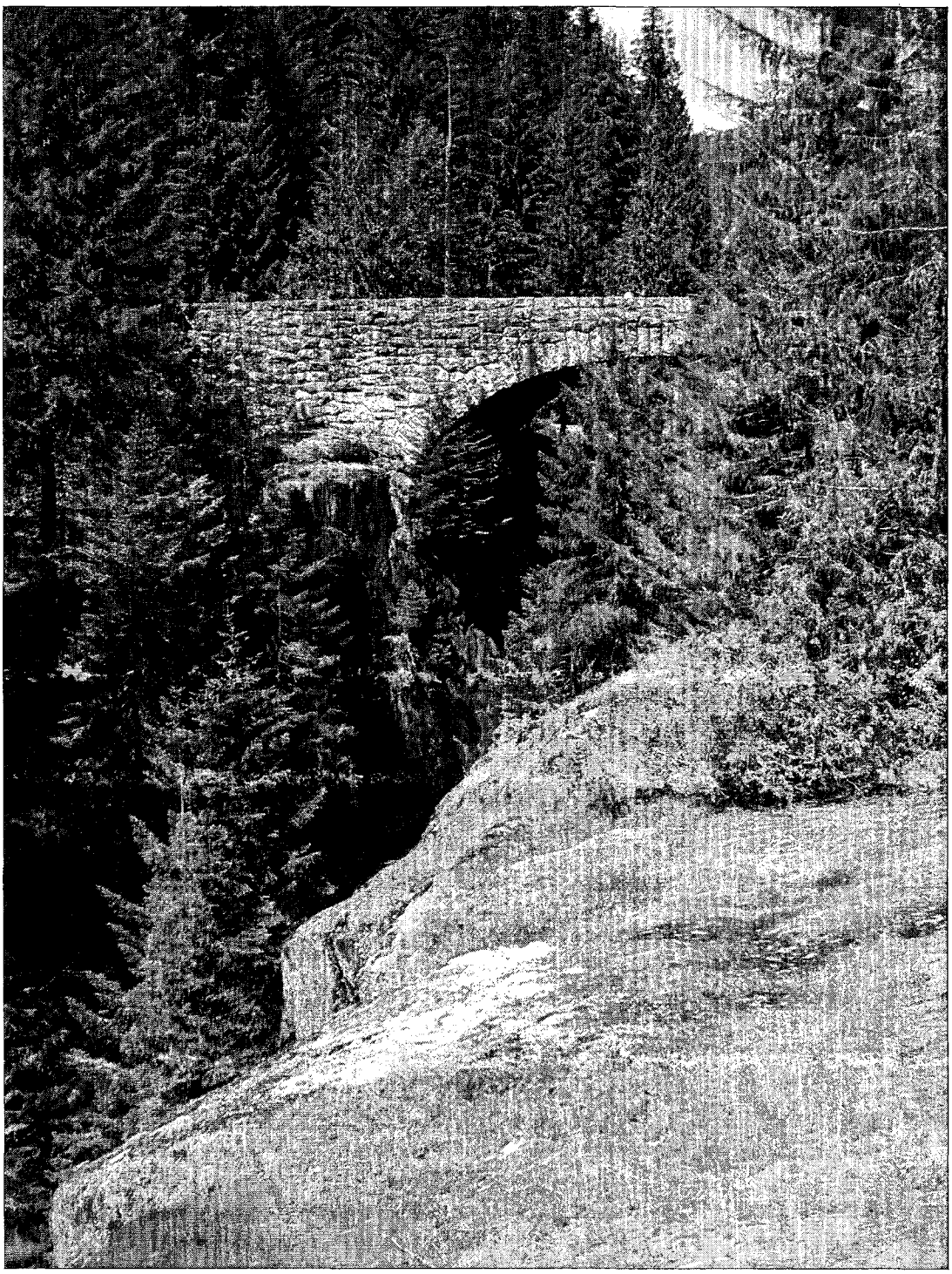


Figure 3.9. Contemporary photo showing contributing Box Canyon Muddy Fork Bridge (MORA 2004).

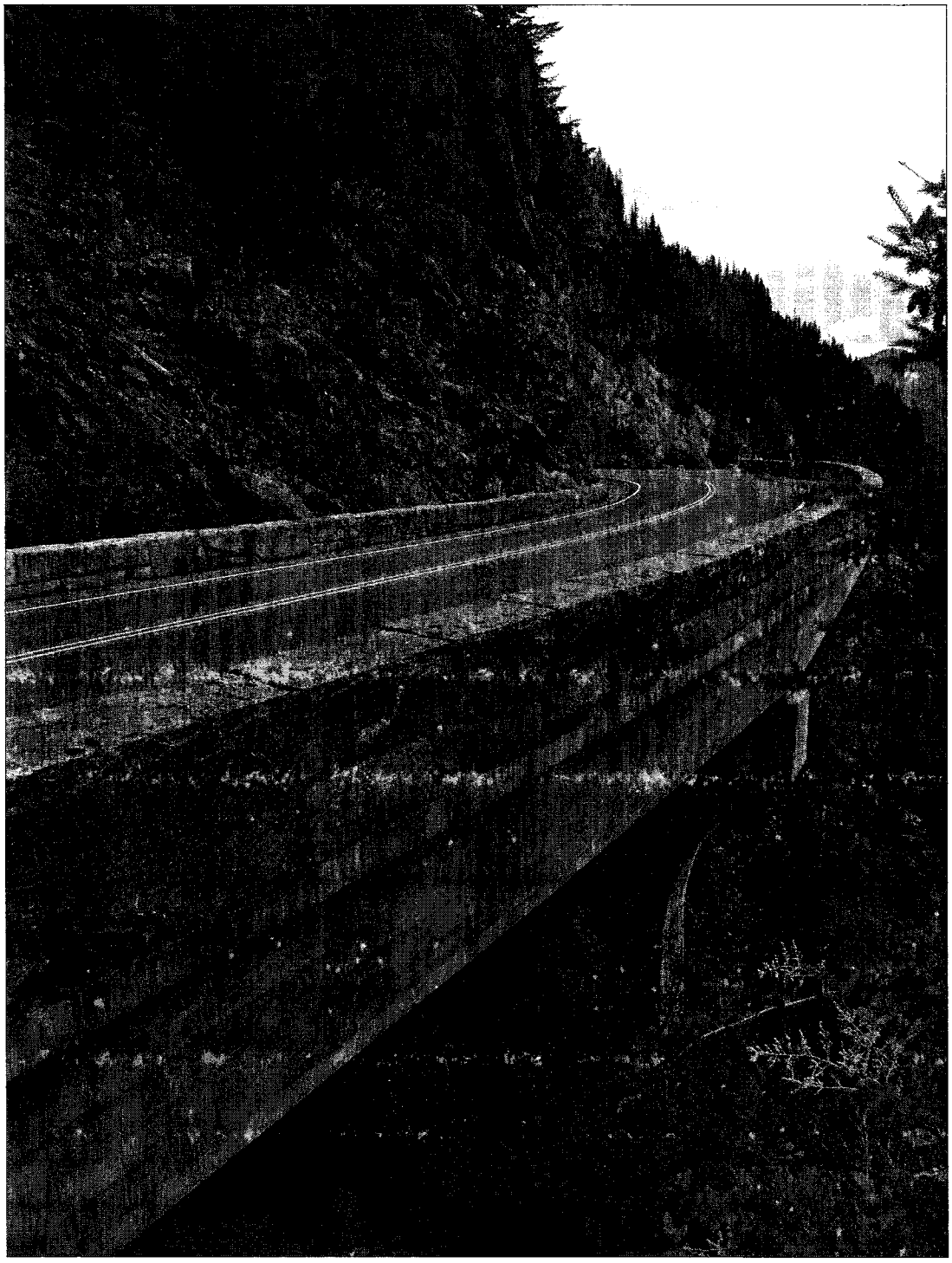


Figure 3.10. Contemporary photo showing contributing viaduct abutting Stevens Canyon Tunnel (MORA 2004).

Figure 3.11. Contemporary photo showing contributing Type 1A guardwall (MORA 2004).

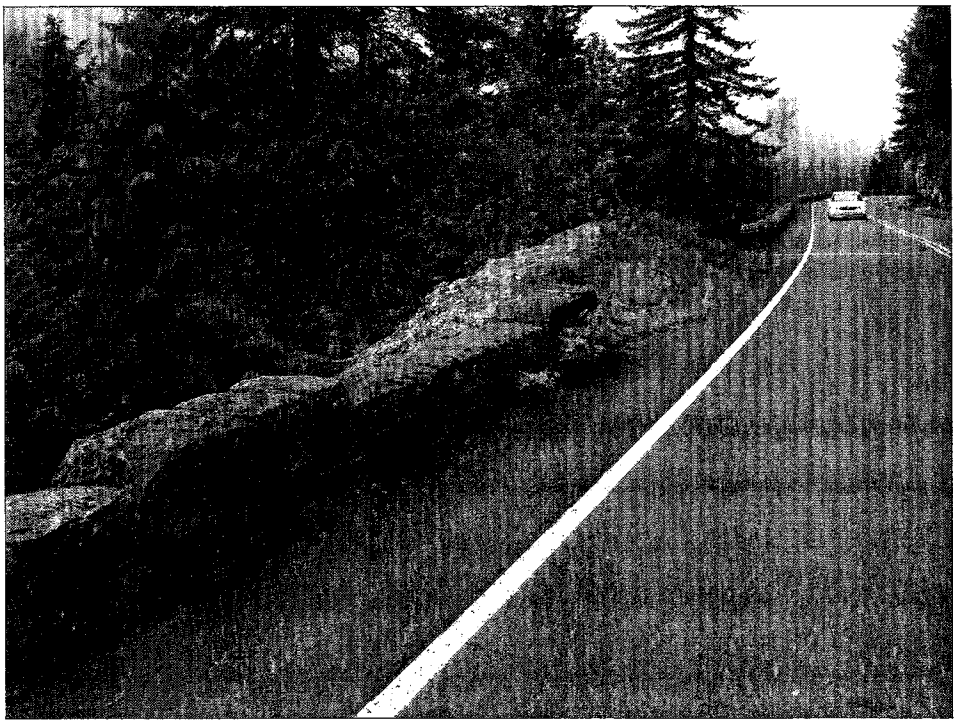


Figure 3.12. Contemporary photo showing contributing Type 2 guardwall with berm between guardwalls (MORA 2004).

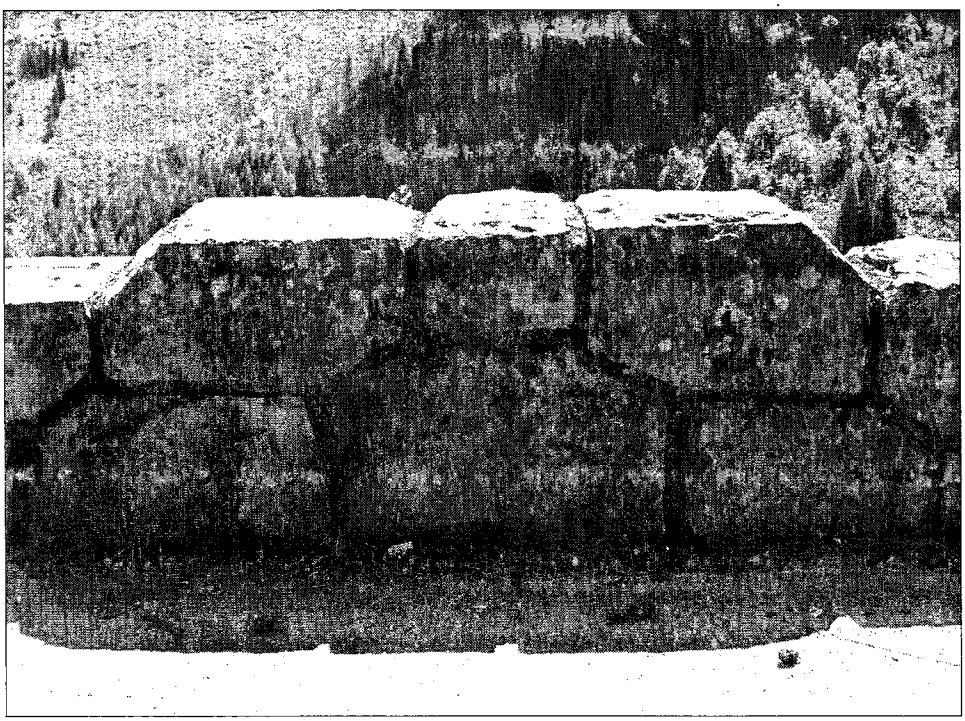


Figure 3.13. Contemporary photo showing contributing Type 2 merlon built by Elliot and Co. (MORA 2004).

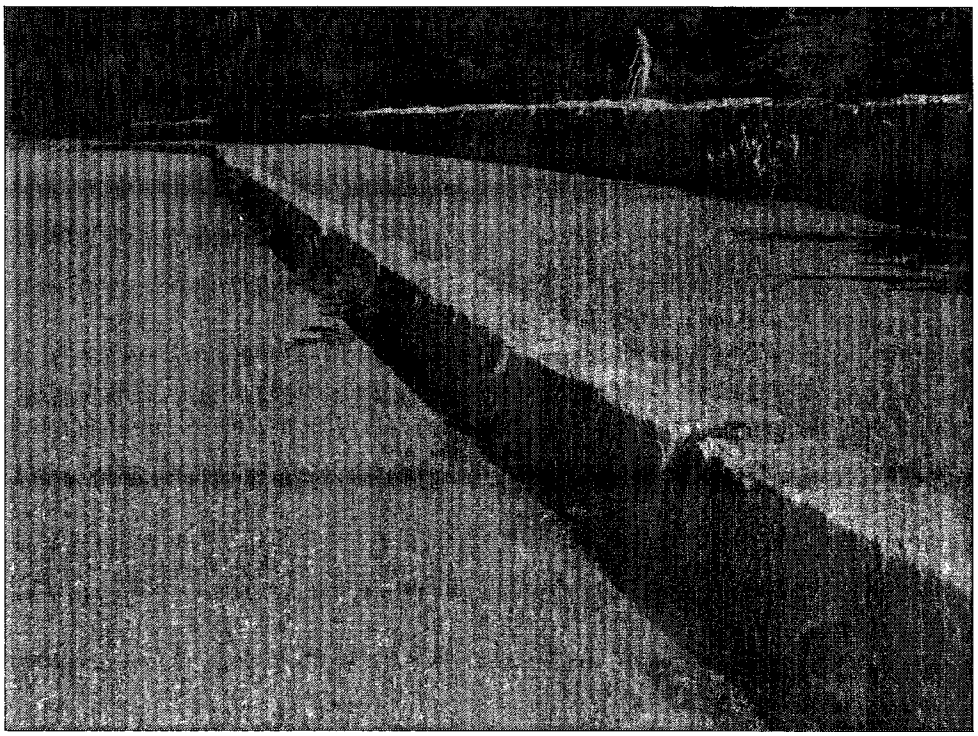


Figure 3.14. Contemporary photo showing contributing Type 1D guard wall with sidewalk and granite curb (MORA 2004).

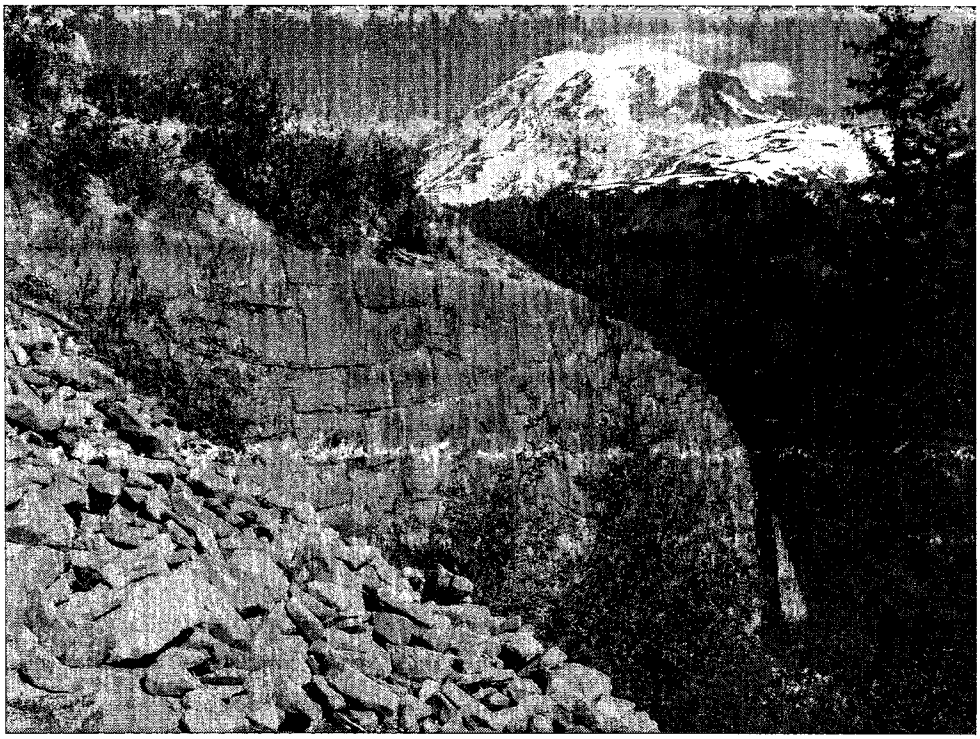


Figure 3.15. Contemporary photo showing contributing mortared retaining wall (MORA 2004).

Figure 3.16. Contemporary photo showing contributing rock barrier (MORA 2004).

Topography

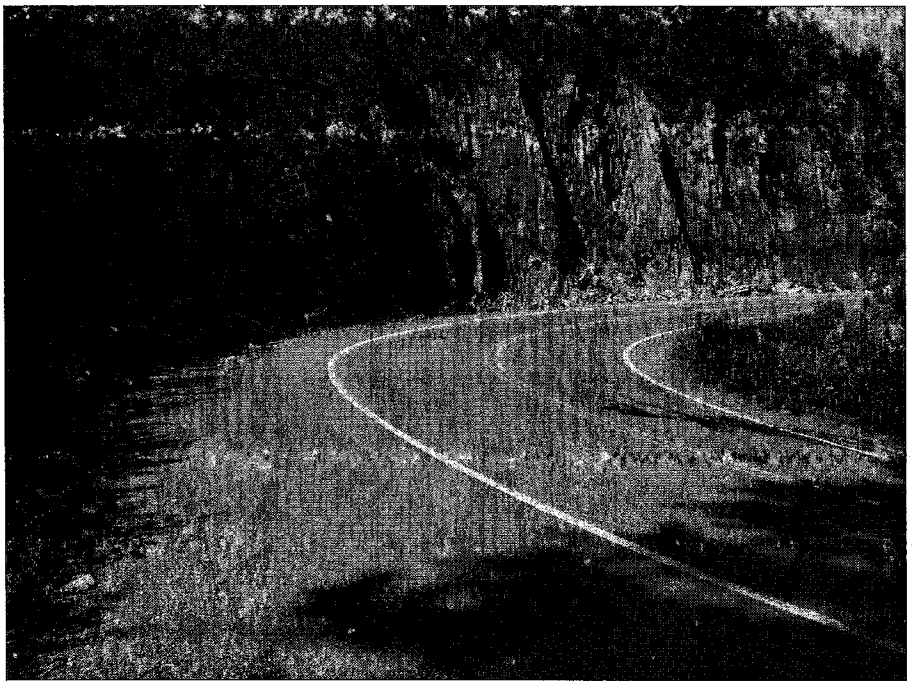


Figure 3.17. Contemporary photo showing contributing rock cut on north side of Stevens Canyon at Stevens Ridge (MORA 2004).

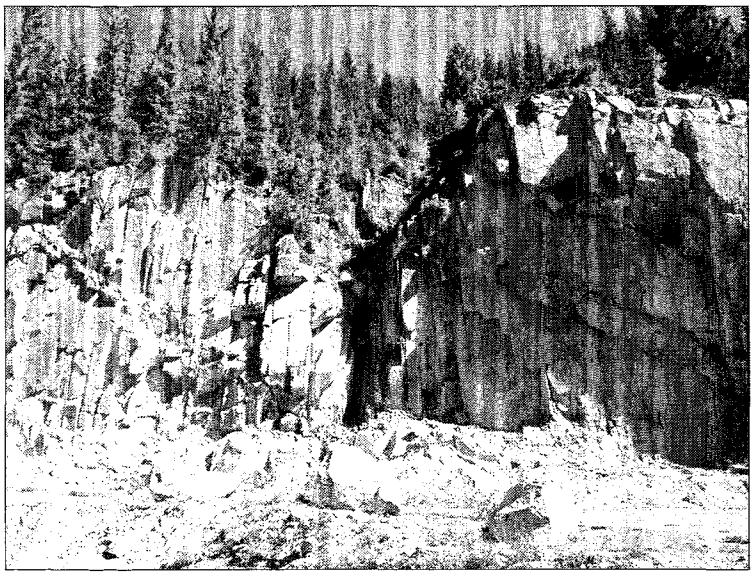


Figure 3.18. Contemporary photo showing contributing rock cut with naturalistic design to channel creek in center of image (MORA 2004).

Figure 3.19. Contemporary photo showing contributing rock cut with naturalistic waterfall design to channel creek (MORA 2004).

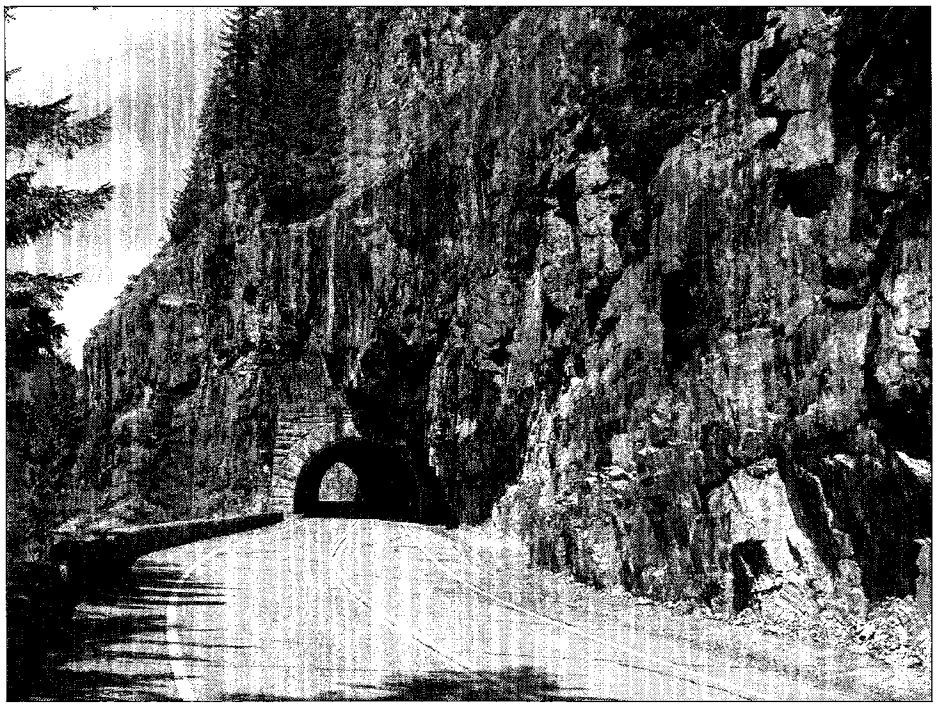


Figure 3.20. Contemporary photo showing contributing rock cut with overhang (MORA 2004).

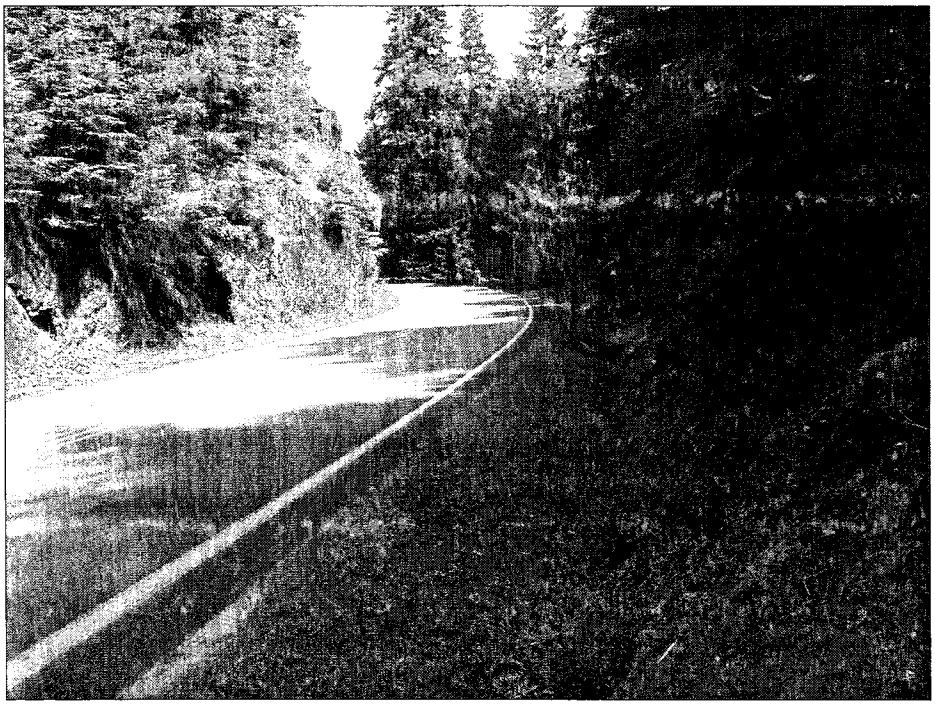


Figure 3.21. Contemporary photo showing contributing double-sided rock cut on both sides of road (MORA 2004).

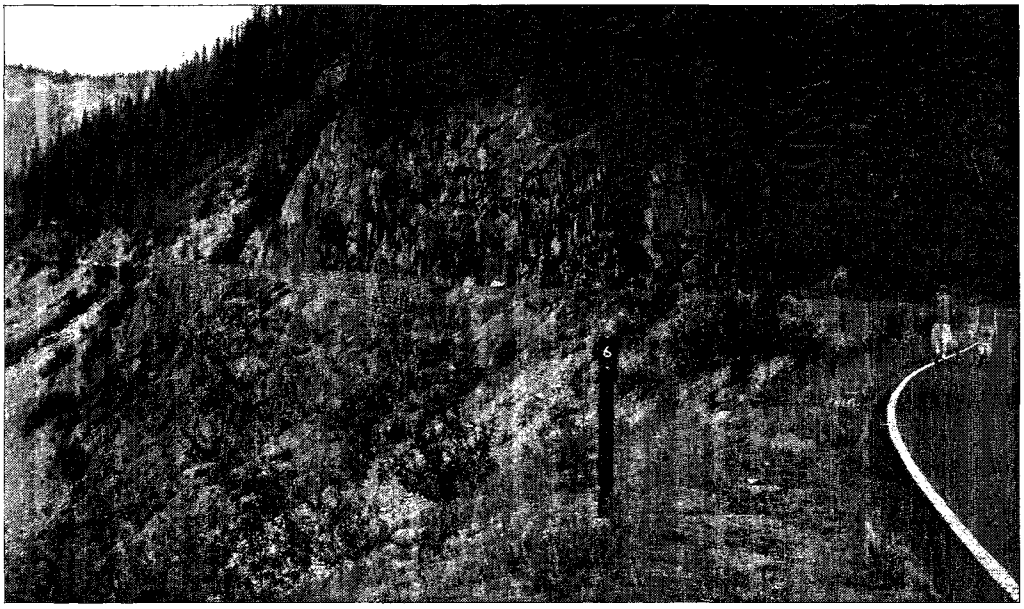


Figure 3.22. Contemporary photo showing contributing rock cut blending with surrounding landscape (MORA 2004).

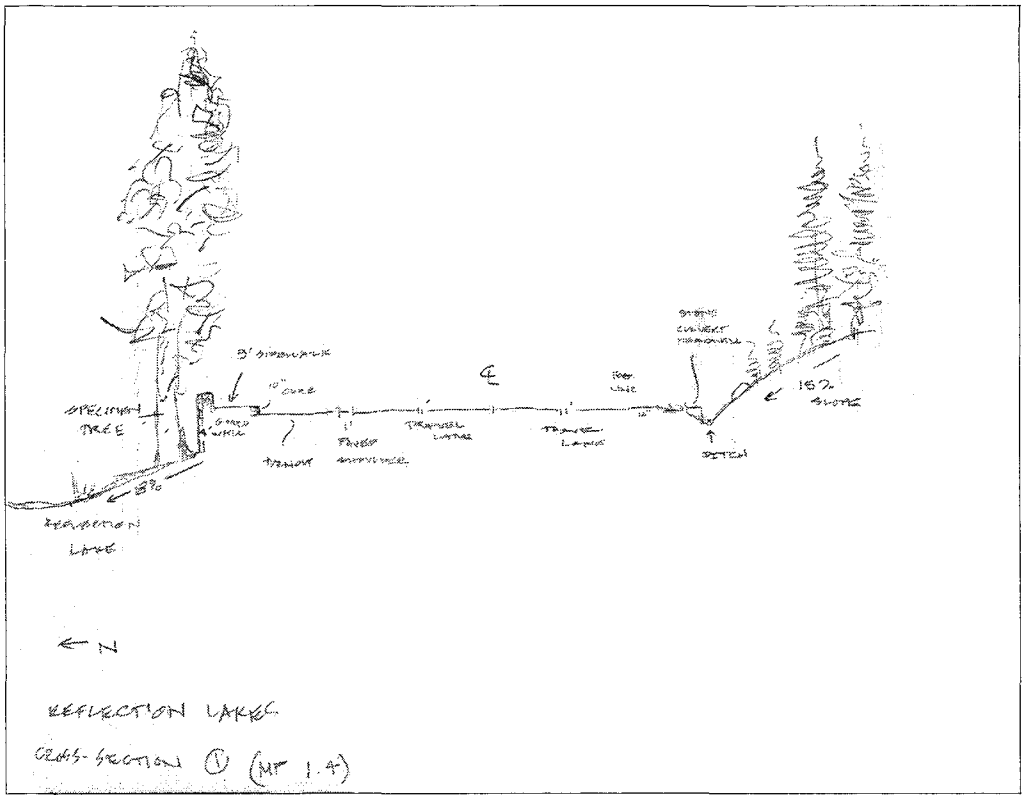


Figure 3.23. Contemporary sketch showing typical cross section at Reflection Lakes, with cut slope, inside ditch, road bed, sidewalk with curb, guardwall and retaining wall, and fill slope from right to left (MORA 2004).

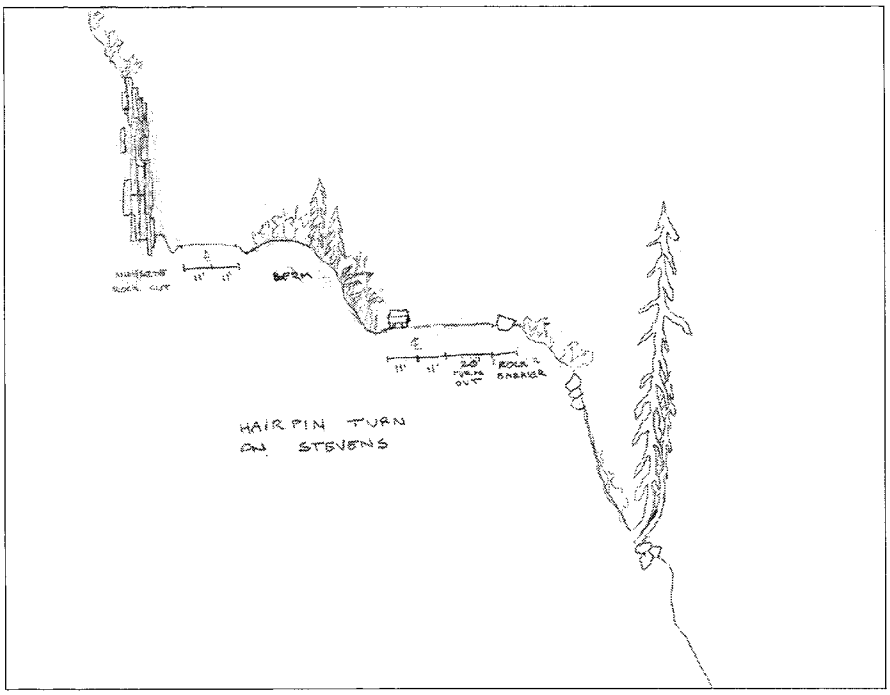


Figure 3.24. Contemporary sketch showing typical cross section on north side of Stevens Canyon, near bench lake hairpin curve (MORA 2004).

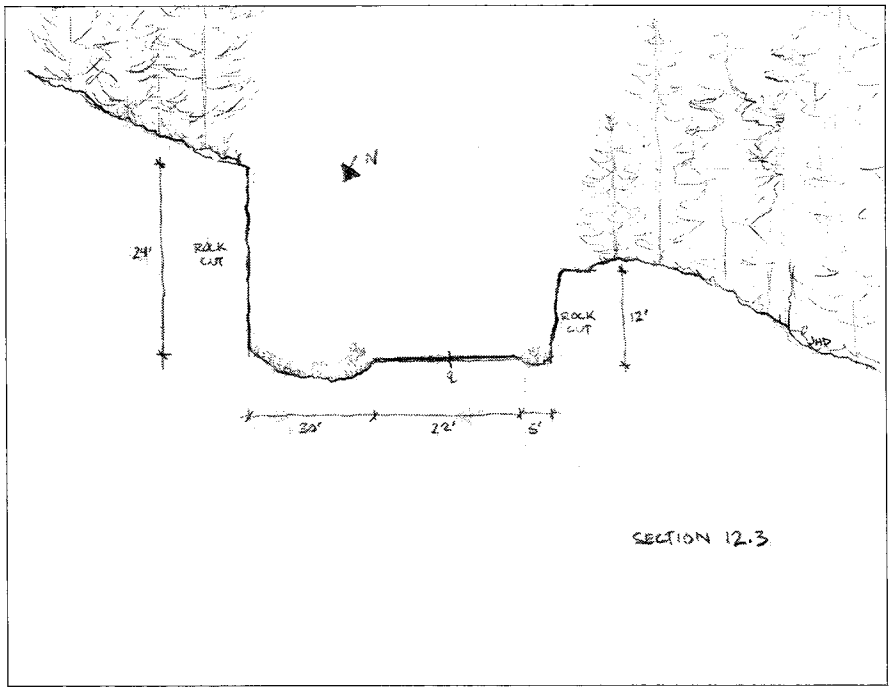


Figure 3.25. Contemporary sketch showing typical cross section around Backbone Ridge with double-sided rock cut (MORA 2004).

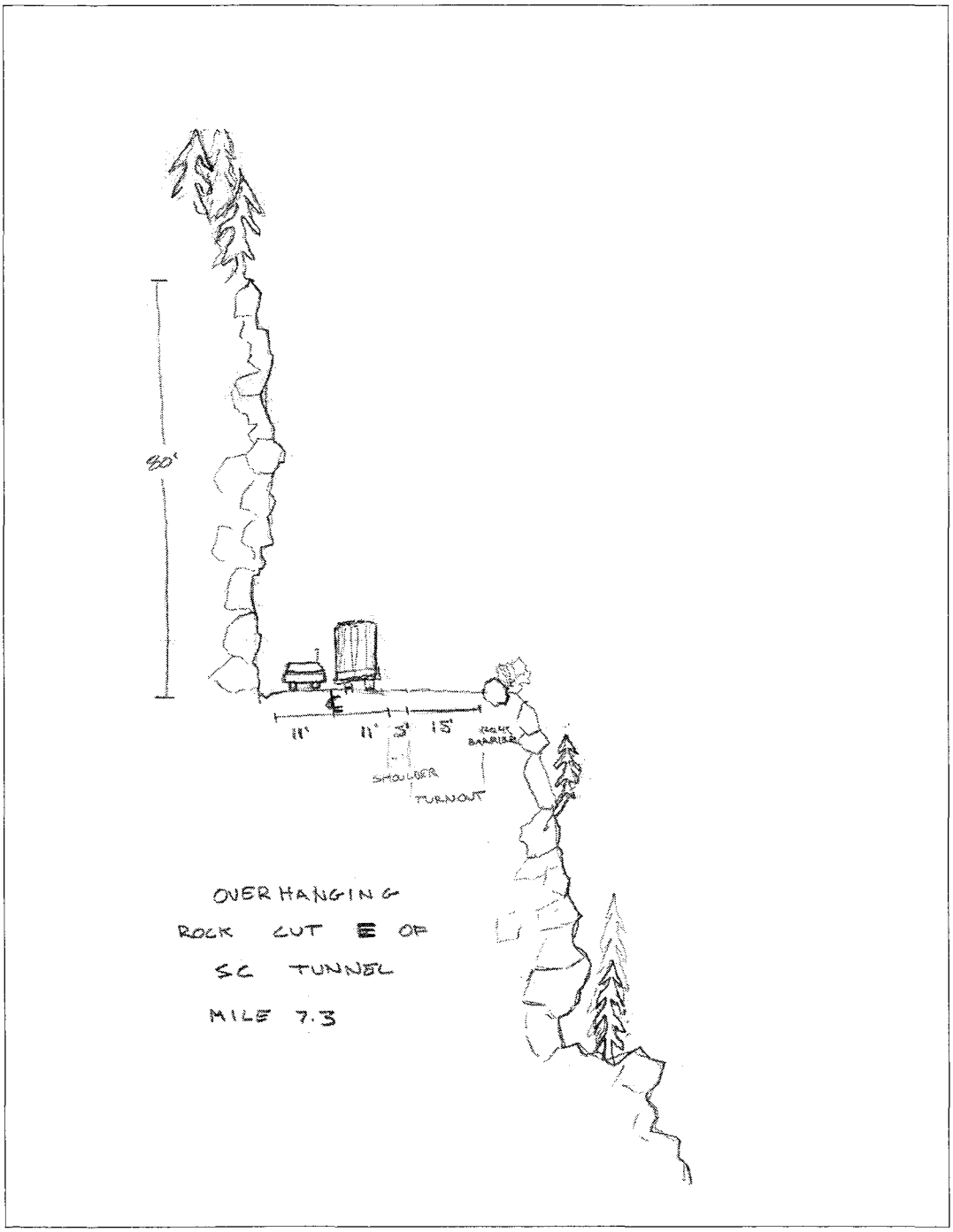


Figure 3.26. Contemporary sketch showing typical cross section on north side of Stevens Canyon at Stevens Ridge (MORA 2004).

Vegetation

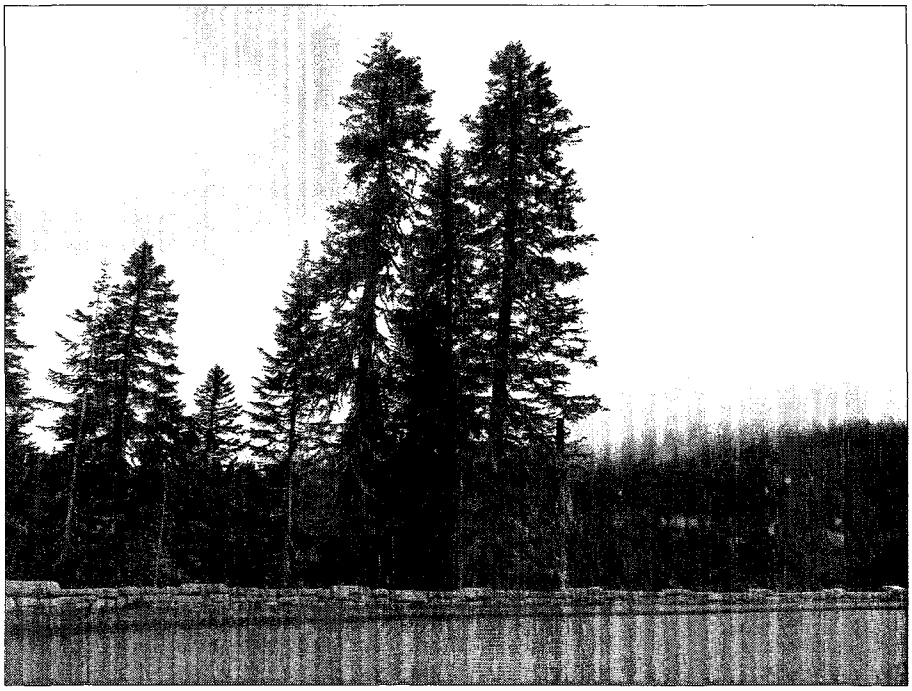


Figure 3.27. Contemporary photo showing contributing specimen trees located along the north side of Inspiration Point turnout (MORA 2004).

Figure 3.28. Contemporary photo showing contributing specimen trees located along the south side of Inspiration Point turnout (MORA 2004).

Figure 3.29. Contemporary photo showing contributing dry-laid stone treewell next to a specimen tree close to Inspiration Point (MORA 2004).

Figure 3.30. Contemporary photo showing two contributing specimen trees that are specimen trees approximately 30" in diameter. The trees are situated on the south slope as the road descends into Stevens Canyon. Both are Pacific silver firs (MORA 2004).

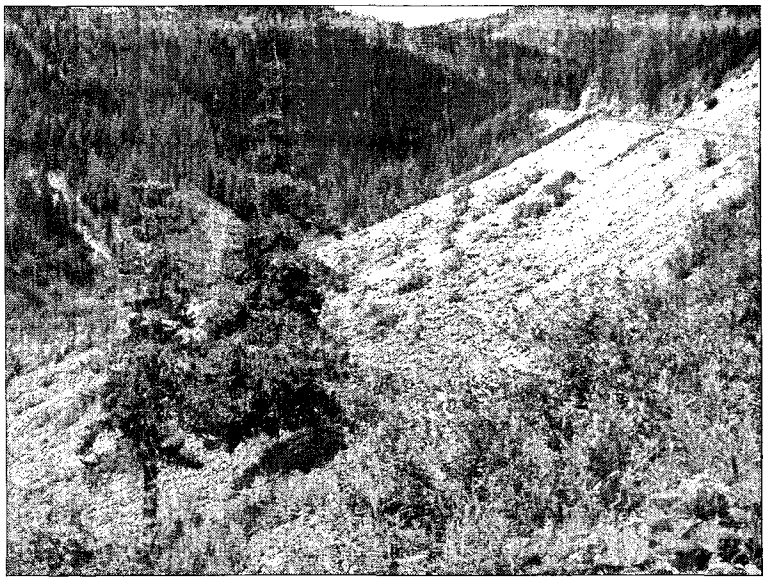


Figure 3.31. Contemporary photo showing two specimen trees in Stevens Canyon, located on the fill slope of the road (MORA 2004).

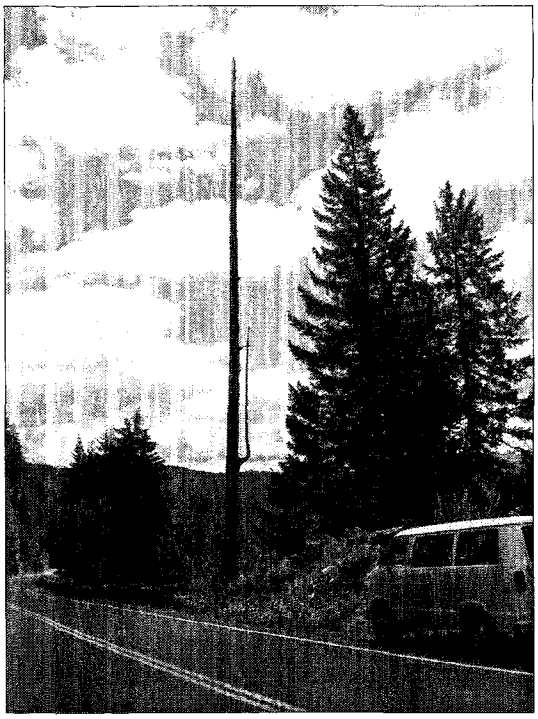


Figure 3.32. Contemporary photo showing contributing tree snag (MORA 2004).

Figure 3.33. Contemporary photo showing contributing specimen trees close to the shoulder. The trees were preserved during construction of the tight radial curves above Falls Creek Bridge (MORA 2004).

Views and Vistas

Figure 3.34. Contemporary photo showing contributing view of Mount Rainier and Tatoosh Range from Inspiration Point at mile point MP0.490 (MORA 2004).

Figure 3.35. Contemporary photo showing contributing view of Mount Rainier from Reflection Lakes at mile point MP01.488 (MORA 2004).

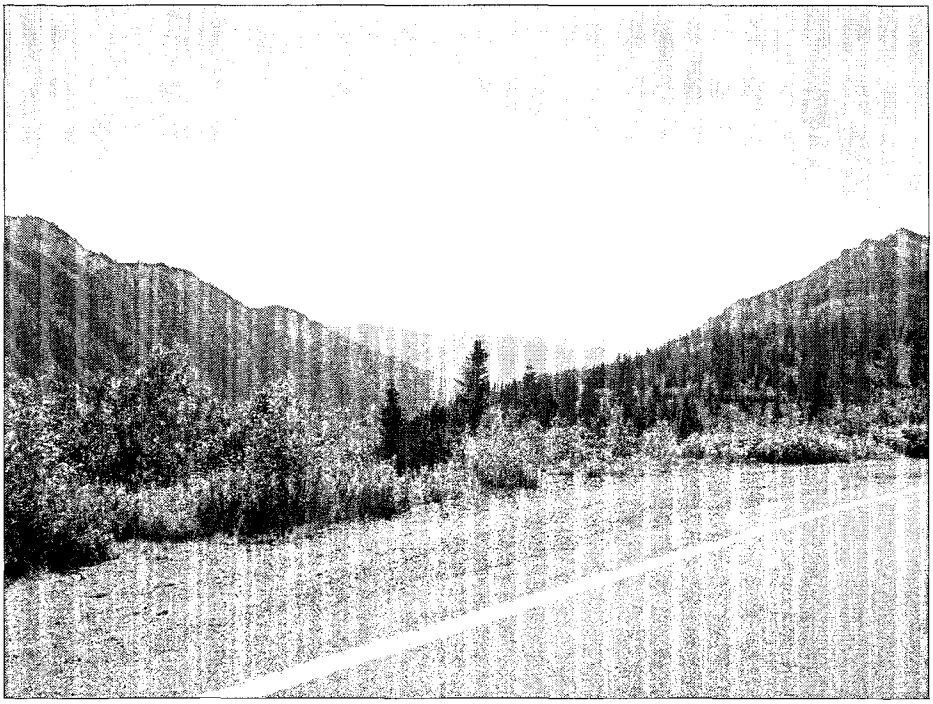


Figure 3.36. Contemporary photo showing contributing view of Stevens Canyon from near Lake Louise at mile point MP02.632 (MORA 2004).

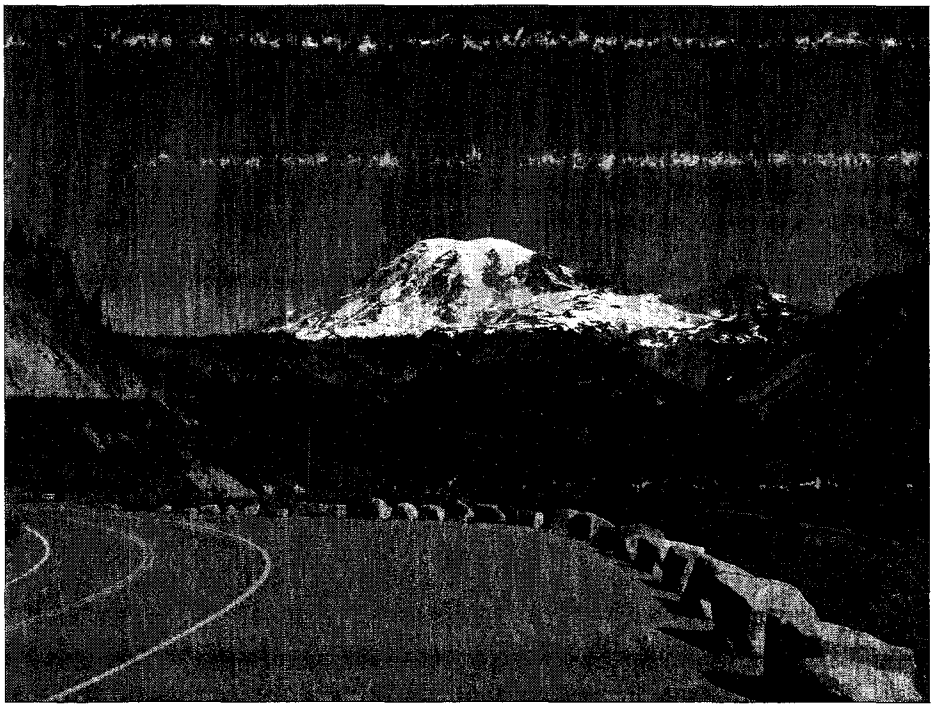


Figure 3.37. Contemporary photo showing contributing view of Mount Rainier from Switchback on south side of Stevens Canyon at mile point MP03.222 (MORA 2004).

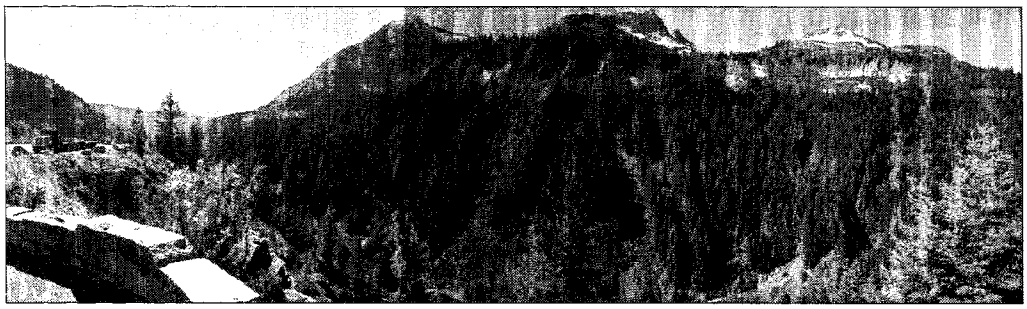


Figure 3.38. Contemporary photo showing contributing view of Martha Falls and Tatoosh Range from north side of canyon at mile point MP05.530 (MORA 2004).

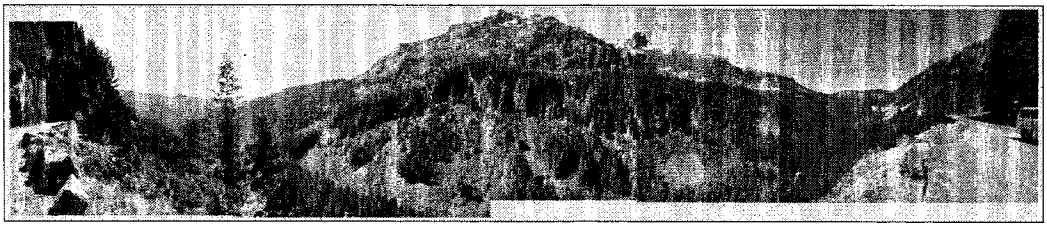


Figure 3.39. Contemporary photo showing contributing view of Tatoosh Range and Stevens Canyon from west of Stevens Canyon Tunnel at mile point MP06.868 (MORA 2004).

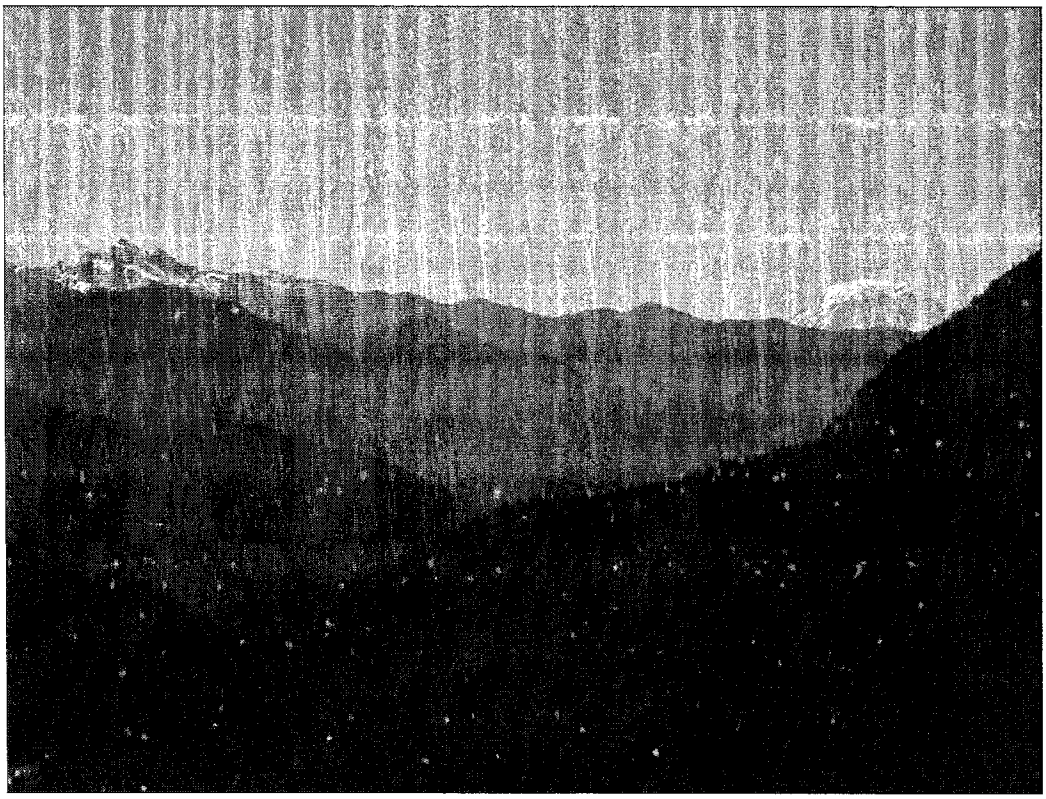


Figure 3.40. Contemporary photo showing contributing view of Mount Adams and Cowlitz River Valley from west end of Stevens Canyon at mile point MP07.994 (MORA 2004).

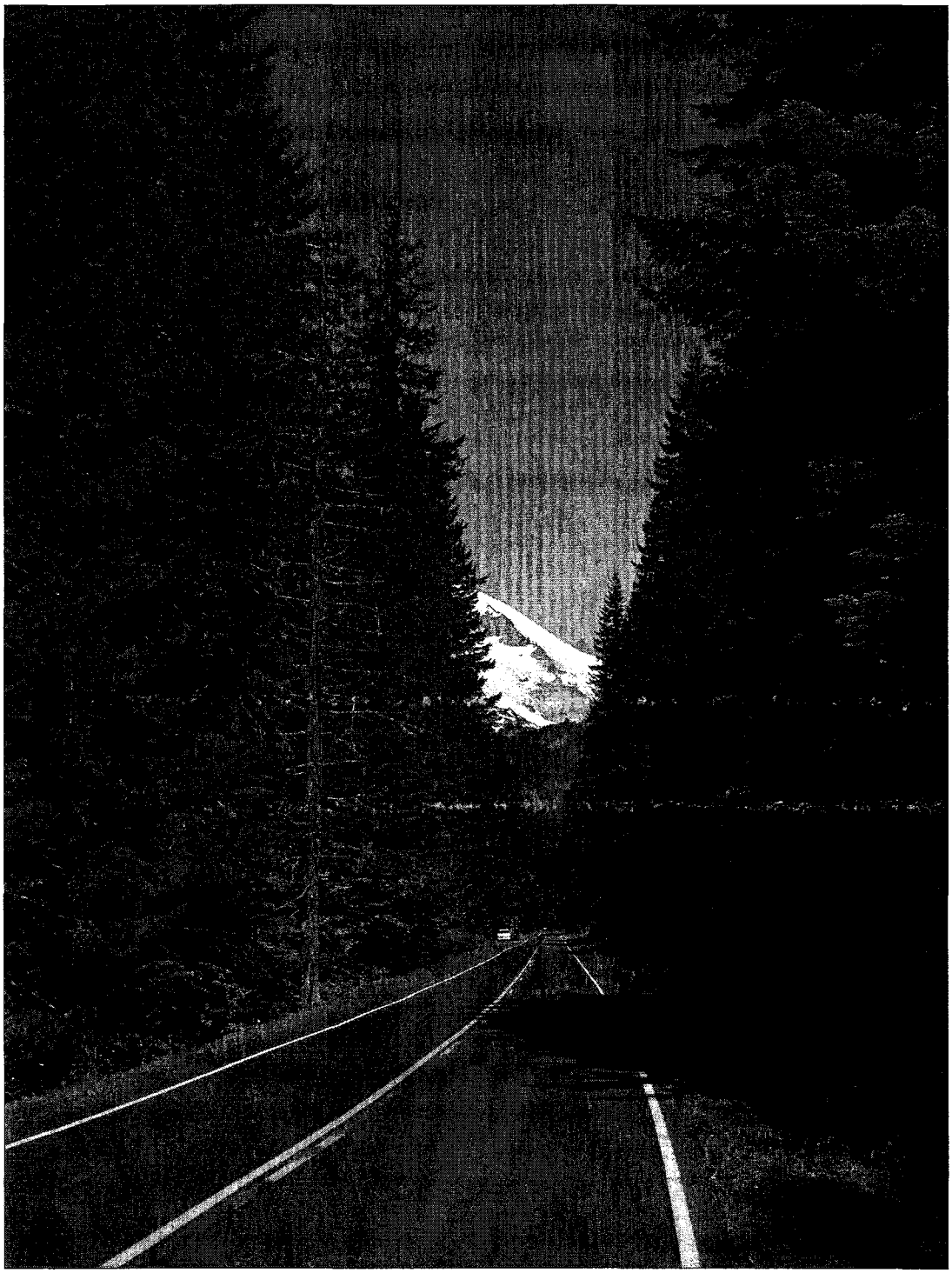


Figure 3.41. Contemporary photo showing contributing framed view of Mount Rainier at mile point MP12.020 (MORA 2004).

Figure 3.42. Contemporary photo showing contributing view of Mount Rainier and Tatoosh Range obscured by tree growth at mile point MP12.374 (MORA 2004).

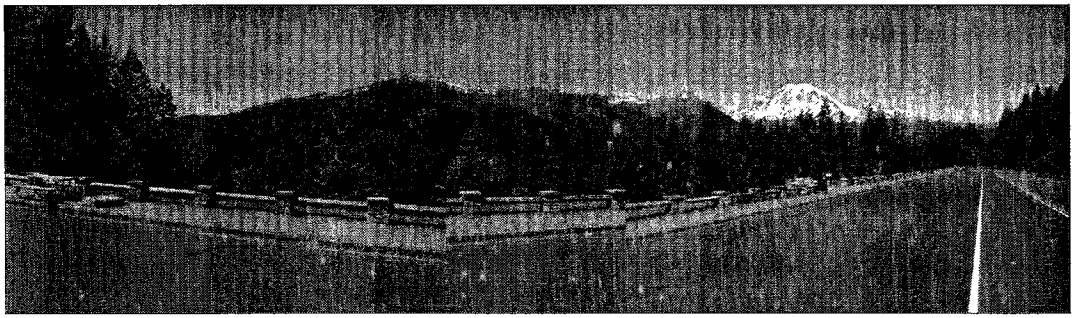


Figure 3.43. Contemporary photo showing contributing view of Mount Rainier and Tatoosh Range from Backbone Ridge turnout at mile point MP13.154 (MORA 2004).

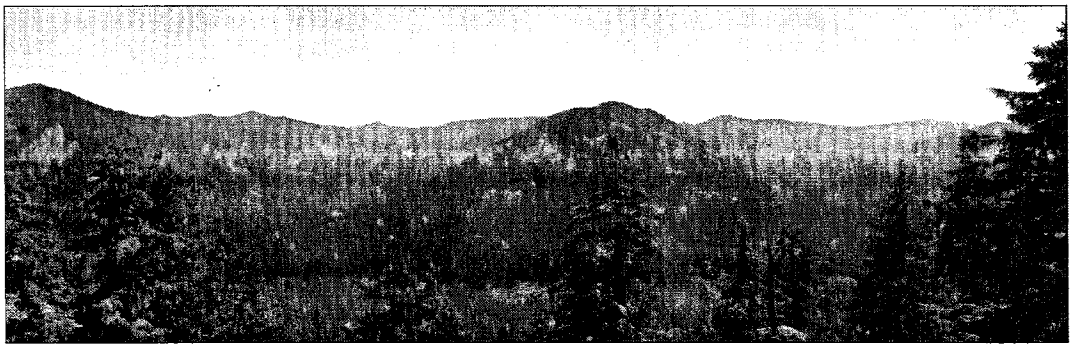


Figure 3.44. Contemporary photo showing contributing view of Ohanapecosh River Valley from east side of Backbone Ridge at mile point MP13.566 (MORA 2004).

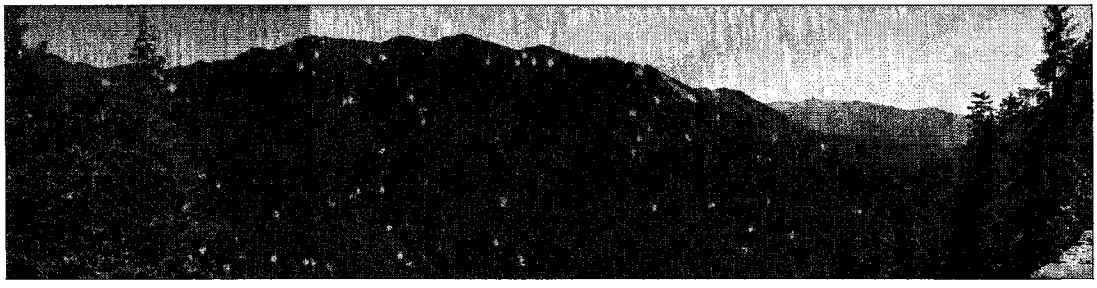


Figure 3.45. Contemporary photo showing contributing view of Ohanapecosh River Valley at mile point MP15.768 (MORA 2004).

Figure 3.46. Contemporary photo showing contributing view of Falls Creek Waterfall from Stevens Canyon Highway at mile point MP18.488 (MORA 2004).

Small Scale Features

Figure 3.47. Contemporary photo showing contributing rustic sign at Box Canyon designed in 1955 (MORA 2004).

Figure 3.48. Contemporary photo showing contributing culvert located between Backbone and Nickel Creek (MORA 2004).

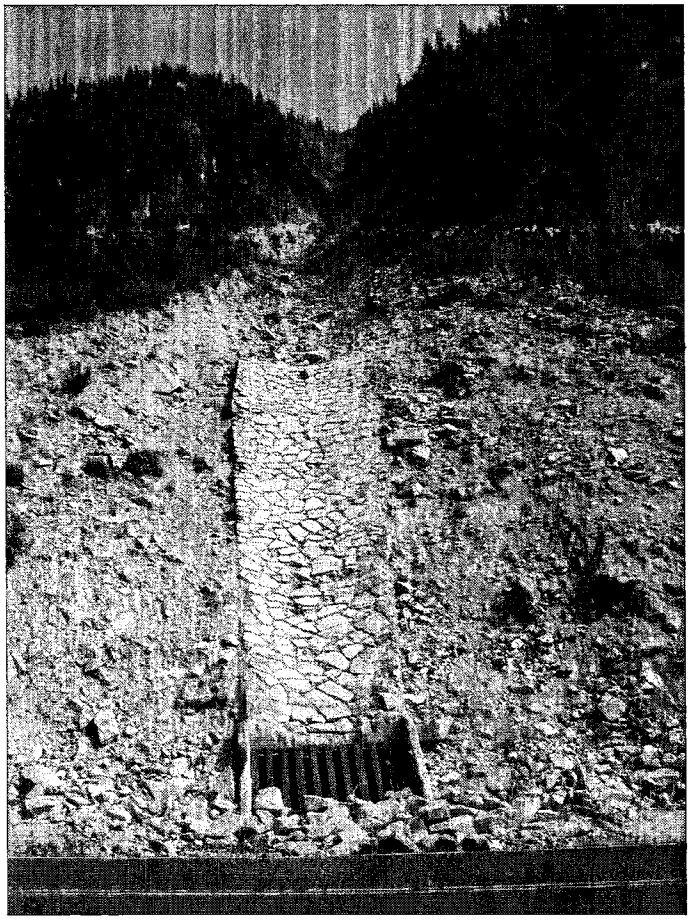


Figure 3.49. Contemporary photo showing contributing avalanche chute and drainage grate (MORA 2004).

Figure 3.50. Contemporary photo showing contributing drinking fountain at Box Canyon (MORA 2004).

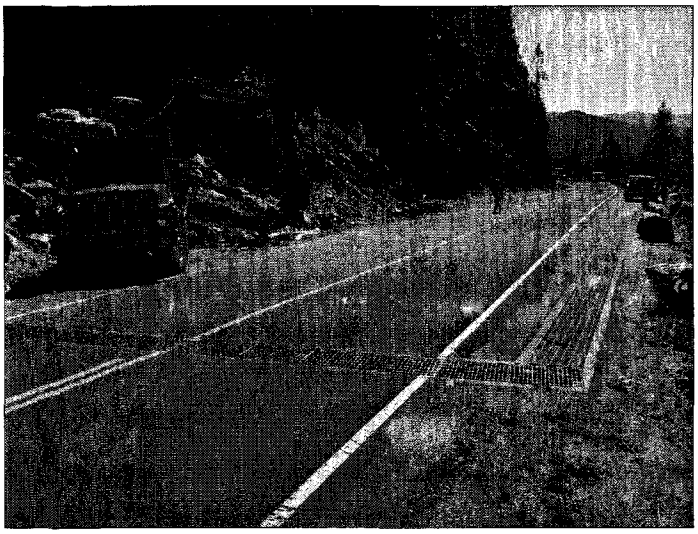


Figure 3.51. Contemporary photo showing non-contributing strip drain at Stevens Canyon (MORA 2004).

Appendix A: Road Construction Phases

SECTOR	DESCRIPTION	MILES	BEGIN	END	CONTRACTOR	LOCATION	SOURCE
4A	Inspiration to Reflection Lakes	1.5m					
4A.0.0	Clearing + Grading	1.200m	07/25/31	10/10/33	Holmberg + Norman, Inc.		HAER-05/Dwg1950
4B	Reflection Lakes to Stevens Canyon	3.0m					
4B.0.0	Clearing + Grading	3.117m	11/10/33	10/19/35	Colonial Building Co.	Spokane, WA	HAER-06/Dwg1950
4C	Stevens Canyon to Box Canyon	4.0m					
4C.1.0	Clearing + Grading	0.944m	07/00/34	10/00/35	Colonial Building Co.	Spokane, WA	HAER-06/Dwg1950
4C.1.0	Bridge	0.014m	05/00/40	07/00/41			Dwg1950
4C.2.0	Clearing	2.640m	07/05/35	10/26/35	Erickson, Johnson + Smith Bros.	Naches, WA	HAER-06/Dwg1950
4C.2.0	Grading + Tunnel	1.202m	08/00/35	00/00/37	Elliot + Co.	Seattle, WA	HAER-07/Dwg1950
4D	Box Canyon to Canyon Divide	5.0m					
4D.0.0	Clearing	3.626m	00/00/38	10/00/39			Dwg1950
4D.0.0	Bridge	0.014m	08/00/41	10/00/39	Sam Orino Co.	Spokane, WA	HAER-07
4D.1.1	Grading	0.692m	00/00/38	10/00/39	Sam Orino Co.	Spokane, WA	HAER-07
4D.0.2	Grading	2.348m	04/15/40	08/08/41	Lucich + Co.	Seattle, WA	HAER-07/Dwg1950
4D.0.3	Reconstructed Grade	1.093m	04/00/41	10/00/41			Dwg1950
4E	Canyon/Cowlitz Divide to Rte 123	8.5m					
4E.1.0	Grading	2.317m	03/00/34	09/00/35	Sam Orino Co.	Spokane, WA	HAER-06/Dwg1950
4E.2.0	Clearing	3.220m	05/00/35	11/00/36			Dwg1950
4E.2.1	Clearing + Grading	1.630m	10/00/35	11/25/36	A.C. Greenwood Co.		HAER-07/Dwg1950
4E.2.1	Viaduct	.0177m	06/00/41				Dwg1950
4E.2.2	Grading	1.3250m	05/00/37	08/00/38			Dwg1950
4E.2.3	Clearing + Grading	1.3800m	05/00/37	08/00/38	Lucich + Co.	Seattle, WA	HAER-07/Dwg1950
4E.2.3	Viaduct	0.0587m	06/00/41				Dwg1950
	Stevens Creek Bridge		05/00/40	07/00/41	Sam Orino Co.	Spokane, WA	HAER-08
1941-1950	W W II						
Box Canyon	Bridge			08/00/52	Hawkins + Armstrong, Inc	Seattle, WA	HAER-08
Nickel Creek	Bridge				Hawkins + Armstrong, Inc	Seattle, WA	HAER-09
Upper Tunnel	Viaduct		06/00/51	10/00/52	Fred H. Slate Co.	Oregon	HAER-09
Box Canyon	Bridge		00/00/50	09/00/52	JH + NJ Conley Brothers	Portland, OR	HAER-09
Falls Creek	Bridge		07/00/55	00/00/57	Wayne Construction Co.	Seattle, WA	HAER-10
Ohanapecosh	Bridge		07/00/55	00/00/57	Wayne Construction Co.	Seattle, WA	HAER-10
4A-E	General Finish		08/00/54	09/04/57	J.A.Terteling + Sons, Inc.		
1957-2003							
Ohanapecosh	Entry Station			00/00/64			
General	Asphalt Ditches + Drains			00/00/66			
General	Asphalt Resurfacing		00/00/66	00/00/68	Cascade Asphalt Paving Co.		HAER-10