
**National Park Service
Cultural Landscape Inventory
2007**



**Mather Memorial Parkway
Mount Rainier National Park**

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2007**

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Mount Rainier National Park**

Mount Rainier National Park concurs with the findings of the CLI, including the management category and condition assessment as identified below:

MANAGEMENT CATEGORY: **A: Must be preserved and maintained**

CONDITION ASSESSMENT: **Fair**

David V. Berube 7/26/2007
Superintendent, Mount Rainier National Park Date

Please return to:

Erica Owens
Historical Landscape Architect
National Park Service
Pacific West Regional Office
909 First Avenue
Seattle, WA 98104-1060



STATE OF WASHINGTON

DEPARTMENT OF ARCHAEOLOGY & HISTORIC PRESERVATION

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Ms. Erica Owens
CLI Co-Coordinator
National Park Service
Pacific West Regional Office
909 First Avenue, Floor 5
Seattle, Washington 98104

September 17, 2007

In future correspondence please refer to:

Log: 091707-12-NPS

Property: Mather Memorial Parkway - Cultural Landscape Inventory

Re: CLI - Analysis and Evaluation

Dear Ms. Owens:

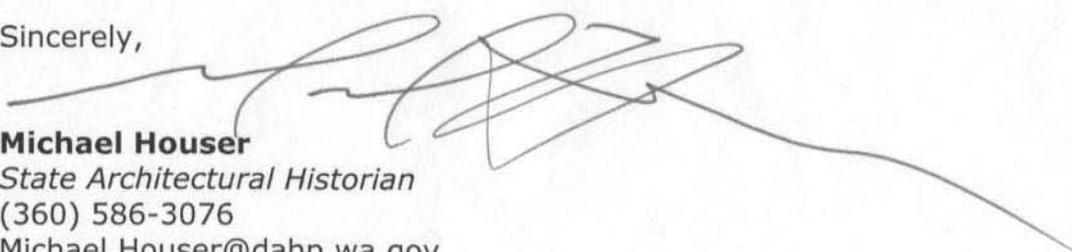
Thank you for contacting our office. I have reviewed the materials you provided to our office and I concur with your professional opinion for the revised boundary adjustments and landscape characteristics for the Mather Memorial Parkway. I also concur with your assessment for the various features of the road which includes seven contributing structures and eleven non-contributing structures.

I look forward to further consultation regarding your determination of effects on these resources as project come up. I am a little concerned about the potential cumulative effect of various projects on Parkway. I hope that in the future project will focus on restoration and rehabilitation, rather than compatible replacement of the various historic elements.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800.

Thank you for the opportunity to review and comment. Should you have any questions, please feel free to contact me.

Sincerely,



Michael Houser

State Architectural Historian

(360) 586-3076

Michael.Houser@dahp.wa.gov

MATHER MEMORIAL PARKWAY
MOUNT RAINIER NATIONAL PARK

Washington SHPO Consensus Determination of Eligibility

Actions Requested:

1) SHPO concurrence that the landscape characteristics as identified in the CLI contribute to the historic character of the site (see the following landscape characteristic descriptions in the Analysis and Evaluation section of the CLI: Spatial Organization, Natural Systems and Features, Circulation, Topography, Land Use, Views and Vistas, and Vegetation):

I concur , I do not concur that the landscape characteristics as described in the CLI contribute to the historic character of the Mather Memorial Parkway.

2) SHPO concurrence with the boundary adjustment for the Mather Memorial Parkway that includes all historic features associated with the road. (See the Boundary Description in the CLI.)

I concur , I do not concur with the boundary proposed for the Mather Memorial Parkway as described in the CLI.

3) SHPO concurrence with the list of contributing and non-contributing structures to the Mather Memorial Parkway, (see tables below):

Structures already listed on the National Register of Historic Places (NR#97000344):

Structure Name	Date Listed on National Register
Mather Memorial Parkway	1997
Chinook Pass Entrance Arch	1997
Stone Marker at Yakima Highway Intersection	1997

Contributing Structures: Based on the information provided in the CLI, the following structures have been identified as **contributing** features of the Mather Memorial Parkway:

Contributing Structure Name	Date Built	Concur	Do not Concur
Mather Memorial Parkway Guardwalls - Type 1 w/ retaining walls (2)	1920s	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Mather Memorial Parkway Retaining Walls (5)	Pre-1932	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Chinook Creek Box Culvert (1)	1919-1940	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Contributing Structure Name	Date Built	Concur	Do not Concur
Mather Memorial Parkway 18"-24" Culverts w/ mortared headwalls (51)	1919-1940	✓	
Mather Memorial Parkway 18"-24" Culverts w/ drylaid rubble headwalls (17)	1919-1940	✓	
Mather Memorial Parkway 24" Double Culverts (2)	1919-1940	✓	
Mather Memorial Parkway 36"-48" Culverts (5)	1919-1940	✓	

Non-contributing Structures: Based on the information provided in the CLI, the following structures have been identified as **non-contributing** features of the Mather Memorial Parkway:

Non-contributing Structure Name	Date Built	Concur	Do Not Concur
Deadwood Creek Bridge	1995	✓	
North Entrance Arch	1977	✓	
Guardwalls – Type 4 w/ retaining walls (6)	1998-2003	✓	
Guardwalls – Type 4 w/out retaining walls (2)	1998-2003	✓	
Retaining wall	Post-1940	✓	
Stone Pilaster and Wood Railing Fences (2)	ca. 1960	✓	
Log Railings (3)	ca. 1960	✓	
Core-Ten Steel W Railings (3)	ca. 1960	✓	
Jersey Barrier (1)	Post-1940	✓	
Box Culvert (1)	1990s	✓	
24" Culverts (7)	1990s	✓	

Reasons/comments why any 'Do Not Concur' blocks were checked:

for


Washington State Historic Preservation Officer

9-17-07

Date

Please return forms to the attention of:

Erica Owens

Cultural Landscape Inventory Coordinator - Seattle

National Park Service

Pacific West Regional Office-Seattle

909 1st Ave, Floor 5

Seattle, WA 98104

(206) 220-4128

erica_owens@nps.gov

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Small Scale Features Map

Landscape Description

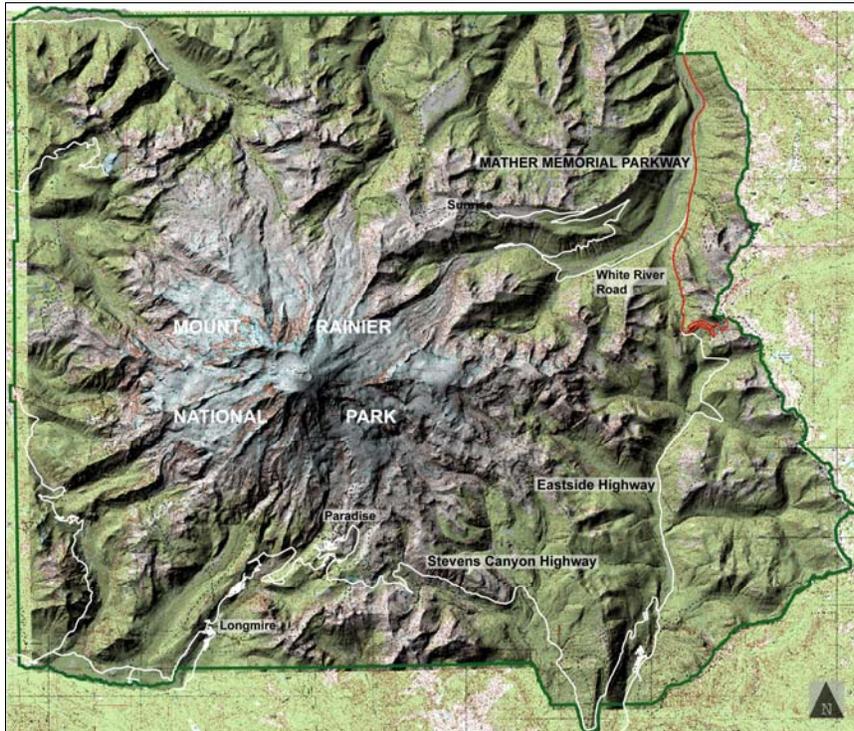
The Mather Memorial Parkway in Mount Rainier National Park is an 11.6-mile segment of a much larger 53-mile state route (Highway 410) that passes through surrounding public lands, connecting Tacoma to Yakima, Washington. The 11.6-mile road segment is a linear landscape that was designed by landscape architects and civil engineers as a scenic drive through Mount Rainier National Park. Today, the Mather Memorial Parkway also serves as a national scenic byway, extending from Enumclaw to Yakima (though the route actually begins in Auburn).

Initially, the road was designed as a route to cross the Cascade Mountains and was not planned to enter a national park. The National Park Service (NPS) did not get involved with the road until the late 1920s, when NPS Director Stephen Mather started to influence the design of roads leading to national parks. The road did not become part of the park until 1931, only one year before the road was completed. However, from 1928 onwards (after Mather became involved), the road followed NPS and Bureau of Public Roads (BPR) standards. In 1931, the road was incorporated into the revised master plan for the park.

The alignment of the Mather Memorial Parkway was carefully selected to showcase spectacular scenery, while carrying vehicles over two mountain passes. Starting at the Chinook Pass Entrance Arch (5,432 feet) the road descends along steep switchbacks to subalpine meadows near Tipsoo Lake. The road continues toward Cayuse Pass where it intersects with the Eastside Highway. After the intersection, the road turns northward, passes Deadwood Creek and begins its rapid descent into the White River valley. Following the valley floor, the road exits the park at the North Entrance Arch. Along its route, the road provides access to Tipsoo Lake, Crystal Peak Trail, Mather Overlook, White River Road and a number of backcountry trailheads.

The Mather Memorial Parkway is a nationally significant historic designed landscape that is part of a rare example of an early national park scenic highway, and is an integral part of the early master plan for the park. The historic road is within the Mount Rainier National Historic Landmark District (NHLD). Designated in 1997, the NHLD is nationally significant for its association with the events of early National Park Service master planning (criterion A) and the design style of naturalistic landscape architecture (criterion C) perpetuated by the NPS in the period between World War I and II. The road is distinguished by outstanding engineering achievements and features of naturalistic design. The period of significance for the Mather Memorial Parkway is from 1919-1940, reflecting the period when the NPS influenced the design and construction of the road. The naturalistic character of the road is evident in its remaining landscape characteristics: spatial organization, natural systems and features, circulation, topography, land use, buildings and structures, small scale features, views and vistas, vegetation, and archaeological sites. These patterns and their surviving features continue to exist as originally planned, conveying the integrity of the road as a scenic highway.

Location Map



Mather Memorial Parkway is located within the northwestern portion of Mount Rainier National Park.

Boundary Description

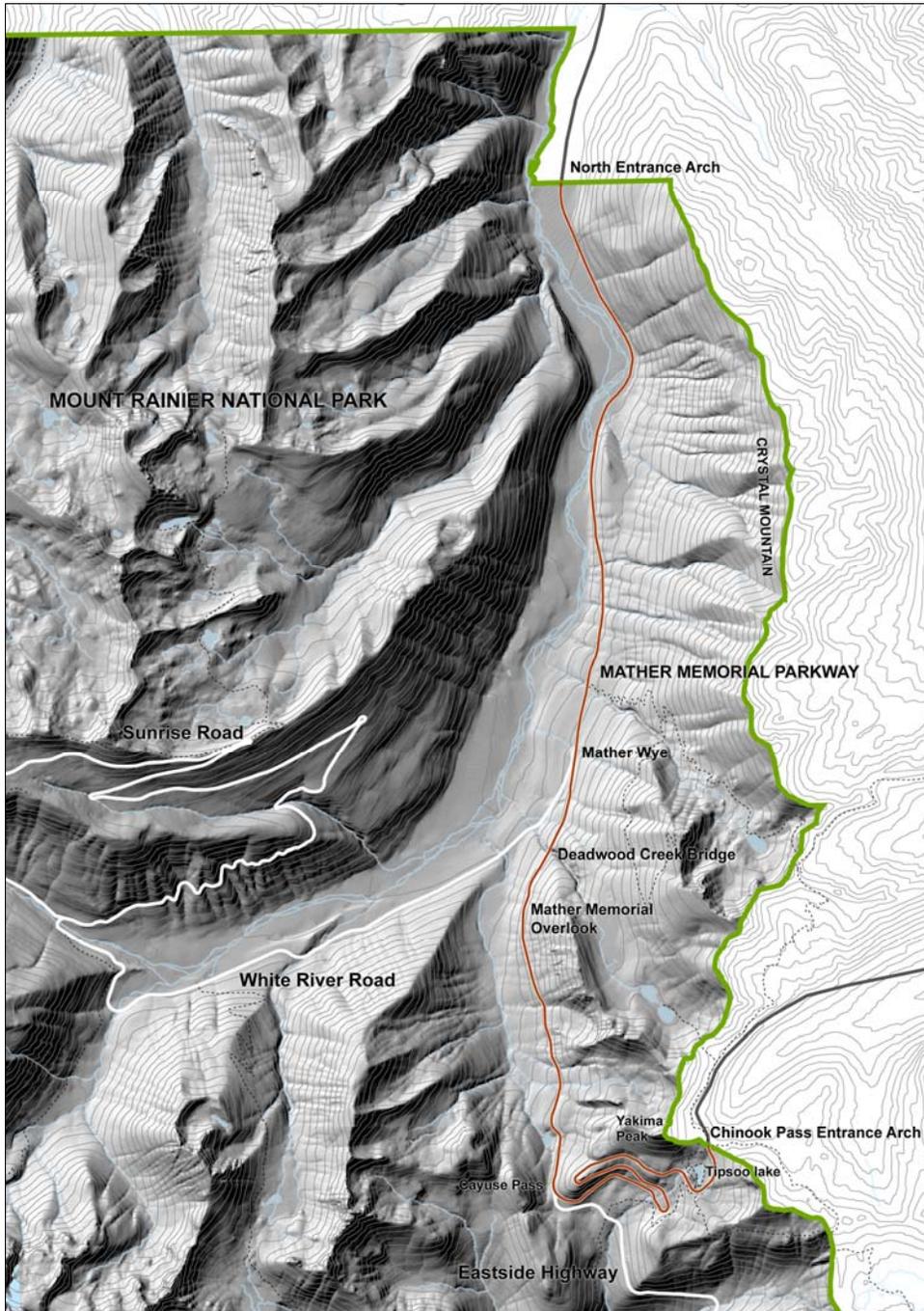
Boundary Justification

The boundary for all historic roads in Mount Rainier National Park is defined in the 1997 National Historic Landmark District (NHLD) nomination as “a corridor 60 feet wide (30 feet from the centerline of the roads in either direction) and incorporating all of the historic structures associated with road construction, including ditches, swales, culverts, and retaining walls.” Findings from this CLI suggest that the boundary described in the NHLD nomination requires expansion to sufficiently encompass all the features associated with the road (see boundary description below). The CLI recommends the boundary be widened from a 60-foot corridor to a 200-foot corridor (100 feet from the centerline of the roads in either direction) to include all the constructed features along the road.

Boundary Description

The boundary for Mather Memorial Parkway is defined by this CLI as 100 feet on either side of the centerline of the road for a distance of 11.6 miles beginning at the Chinook Pass Entrance and terminating at the north entrance of the park.

Site Plan



Site plan showing major features along the Mather Memorial Parkway. See “Supplemental Information” section in the Appendix for a full-sized map.

Chronology

Year	Event	Description
2000 BC – 1917 AD	Established	Ancestors of the Yakama people developed and used the Chinook Pass Trail for east-west travel over Chinook Pass at the Cascade Crest.
1899 AD – 1899 AD	Established	Mount Rainier National Park was established.
1907 AD – 1913 AD	Designed	Recommendations and surveys were completed by the Army Corps of Engineers to create a road around the mountain. “The Wonder Road” or “Round-the-Mountain” road would pass over Cayuse Pass.
1908 AD – 1908 AD	Established	A trail was established on National Forest land up the White River to Silver Creek. The trail roughly followed the future alignment of the Mather Memorial Parkway.
1913 AD – 1913 AD	Built	The State of Washington, with funding oversight from the Bureau of Public Roads (BPR), began construction of the “McClellan Pass Highway” (now called the Mather Memorial Parkway or State Route 410) from Auburn through Enumclaw to the Cascade Crest at Chinook Pass and across to Yakima to provide a link between eastern and western Washington through the Cascades. The first segment connected Auburn with Greenwater, a community north of the Mount Rainier National Park.
1914 AD – 1916 AD	Built	Before the portion of the McClellan Pass Highway was constructed within current park boundaries, the Mount Rainier Mining Company built a private 12-mile road up the north bank of the White River from the site of the proposed White River Ranger Station to Glacier Basin, providing the first access to that portion of the park. The McClellan Pass Highway would loosely follow this early road alignment.
1915 AD – 1915 AD	Built	The first White River Ranger Station was constructed adjacent to the White River (and 1.5 miles downriver from the current day White River Ranger Station).

Year	Event	Description
1916 AD – 1916 AD	Maintenance	The newly established National Park Service (NPS) took over maintenance of the White River mining road within the park boundary.
1916 AD – 1916 AD	Established	Road surveys were made to connect Stevens Canyon, the south end of the Cowlitz Divide, Ohanapecosh and Chinook Creeks, and Cayuse Pass from the southern portion of the park.
1918 AD – 1918 AD	Built	The State of Washington completed construction of the McClellan Pass Highway (today, the Mather Memorial Parkway or State Route 410) as far as the Dalles, a community 10 miles north of the current Park boundary and south of Greenwater.
1919 AD – 1919 AD	Built	Construction continued on the McClellan Pass Highway from the Dalles to the first White River Ranger Station, within present-day park boundaries.
1924 AD – 1924 AD	Altered	Due to flooding problems, the early White River mining road was realigned out of the floodplain.
1925 AD – 1925 AD	Built	The State of Washington completed construction of the McClellan Pass Highway to the White River Ranger Station and renamed it the “Naches Pass Highway” (today, the Mather Memorial Parkway or State Route 410).
1926 AD – 1927 AD	Designed	Plans were developed by BPR, the State of Washington and NPS engineers to build an eight-mile connector route across Cayuse Pass. Alternative routes to connect the Nisqually Road across the southern part of the park were explored by Park engineers.
1928 AD – 1928 AD	Established	NPS Director Stephen Mather visited the Naches Pass Highway under construction, and emphasized the need to design the road as a scenic corridor. Afterwards, NPS collaborated with BPR on the design of the road, using NPS design standards.
1929 AD – 1932 AD	Built	The BPR and the State of Washington constructed the remaining eight-mile segment of the Naches Pass Highway from the vicinity of the first White River Ranger Station to Chinook Pass.

Year	Event	Description
1929 AD – 1935 AD	Replaced	With help from the CCC, the NPS began construction of a new White River Entrance Station and maintenance area. The new facility replaced the first White River Ranger Station along the White River mining road.
1931 AD – 1931 AD	Established	An act of Congress was established extending the boundaries of Mount Rainier National Park as far east as the Cascade Crest, bringing 11.6 miles of the Naches Pass Highway (today, the Mather Memorial Parkway or State Route 410) into park jurisdiction.
1932 AD – 1932 AD	Built	Construction of the Mather Memorial Parkway was completed and opened to traffic, excluding all trucks and heavy commercial vehicles. The parkway remained a state route under state maintenance.
1932 AD – 1932 AD	Built	The road was designated as the “Mather Memorial Parkway” by the Secretary of the Interior in honor of the late national park director and parkway advocate, Stephen Mather.
1934 AD – 1934 AD	Built	A CCC spike camp was built at Crystal Creek beside the Mather Memorial Parkway. Crystal Creek is located a short distance off of the Mather Memorial Parkway, just inside the northeast corner of the park.
1933 AD – 1939 AD	Built	A CCC crew stationed at White River Campground performed roadside cleanup, shoulder revegetation along the Mather Memorial Parkway and built the Chinook Pass Entrance Arch.
1933 AD – 1936 AD	Built	The Tipsoo Lake Developed Area was designed and built. The developed space included a parking area, two comfort stations and the Chinook Pass Entrance Arch. Construction was performed by the CCC.
1938 AD – 1938 AD	Replaced	Deadwood Creek Bridge, the only bridge along the Mather Memorial Parkway, was replaced by a concrete spandrel bridge.

Year	Event	Description
1938 AD – 1938 AD	Established	Throughout the winter months, the State of Washington kept the Mather Memorial Parkway open within the park as far as Cayuse Pass. Historically, Cayuse Pass was heavily used as a ski area, including for slalom races.
1940 AD – 1940 AD	Built	A stone directional marker, designed by the NPS Branch of Plans and Design, was erected at the Mather Wye intersection with the White River Road.
1940 AD – 1940 AD	Built	The East Side Highway was completed in June. With the connection of the East Side Highway to the Mather Memorial Parkway, the park had its first south to north through-route.
1950 AD – 1950 AD	Established	Winter activities were moved to the Tipsoo Lake area as Paradise and Longmire were closed for the winter season. A ski tow was built from a parking area immediately south of Cayuse Pass on the East Side Highway up to Tipsoo Lake.
1956 AD – 1956 AD	Designed	A Mission 66 Development Plan for the park proposed a large campground at Klickitat Creek, just off the Mather Memorial Parkway, as well as picnic areas at Cayuse Pass and the Tipsoo Lake Developed Area. These plans were not implemented.
1971 AD – 1971 AD	Altered	The travel lanes were widened from nine to 11 feet wide, and the width of the shoulders was reduced from three feet to one-foot to gain the extra width for travel lanes. The road was also repaved from the park's north boundary to Cayuse Pass.
1977 AD – 1977 AD	Built	A rustic style entrance arch, similar to the historic Nisqually Entrance Arch, was constructed at the north park boundary.
1988 AD – 1988 AD	Established	The Washington State Department of Transportation (WSDOT) and the NPS reaffirmed their agreement that the State would remain responsible for maintenance of the Mather Memorial Parkway within the park.

Year	Event	Description
1995 AD – 1995 AD	Replaced	Deadwood Creek Bridge was replaced with a single span bridge with concrete girders. The new bridge included simulated stone guardwalls.
1997 AD – 1997 AD	Established	The Mount Rainier National Historic Landmark District was established, which included the Mather Memorial Parkway.
2003 AD – 2004 AD	Built	A vault toilet was installed at the south end of the Tipsoo Lake parking area to provide accessible restrooms to visitors.
1998 AD – 2001 AD	Altered	The Federal Highway Administration (FHWA) began rehabilitating the Mather Memorial Parkway. The 4R project affected the road from the first switchback east of Cayuse Pass to Chinook Pass. The project involved minor road realignment, rebuilding the road bed, repairing or replacing mortared retaining walls, replacement of Type 4 stone guardwalls with taller, stone-veneered guardwalls and the addition of new guardwalls.
2003 AD – 2003 AD	Paved	Washington State Department of Transportation (WSDOT) performed pavement rehabilitation on a 2.4-mile section of State Road State Route 410 near the park boundary. Work was performed between early August and early September, 2003.
2005 – 2005 AD	Paved	Rehabilitation of a 5.42 mile section of road from the milepoint approximately 1/4 mile north of Cayuse Pass was completed in September 2005.
2006 AD – 2006 AD	Altered	In response to winter flooding, WSDOT was permitted by the park to install a rock-faced concrete block dike approximately one mile from the north park entrance on State Route 410, to prevent inundation of the road. The length of the dike is approximately 500 feet—a temporary solution to deal with the dilemma of river aggradation.
2006 AD – 2006 AD	Altered	November 2006 storm caused the White River to overflow its banks, inundating State Route 410 for several miles; however, the road did not sustain any long-term damage or significant changes.

Statement of Significance

The Mather Memorial Parkway (State Route 410) is a cultural landscape within the Mount Rainier National Historic Landmark District (NHLD). Designated in 1997, 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 World War I and II. The NHLD “encompasses almost all the roads, historic developed areas, and historic backcountry structures in the park. The district is a discontinuous district with a continuous core that follows the park road system as a corridor” (Mount Rainier National Park NHLD Nomination, 1997). The period of significance for the Mount Rainier National Park NHLD is 1906-1957, broadly incorporating the earliest and latest rustic period developments in the park.

As part of the NHLD, the Mather Memorial Parkway is significant for its association with the national park system’s most complete and significant example of park master planning. It is also significant for its naturalistic landscape engineering as a scenic park highway. Within the NHLD, the Mather Memorial Parkway’s period of significance begins in 1919 and extends to 1940, reflecting the period when the NPS coordinated the road’s design and construction, and from which the extant landscape characteristics and features date. This CLI recommends the boundary for the Mather Memorial Parkway (State Route 410) be expanded from what is described in the NHLD nomination. See the “Boundary Description” section for more detail.

Park Master Planning (Criterion A)

In association with the events of the American Park Movement and early NPS master planning, the Mather Memorial Parkway is significant as an integral component of the master plan for Mount Rainier National Park, as first developed in the late 1920s. At this time, early planners envisioned park infrastructure to include a system of scenic highways and developed areas, to be known as rustic park villages. This infrastructure would accommodate visitors, while also limiting vehicular access within the park. Implementing a rustic style of architecture and the naturalistic style of landscape architecture in its design, Mount Rainier’s master plan proved to highly influential in the development of master plans for other national parks.

Unique among historic roads within the NHLD, the Mather Memorial Parkway was not initially conceived as a park road; instead it was designed to be a state highway traversing through a national forest. Prior to the 1931 Act of Congress that expanded the park’s boundary, the proposed route of the Mather Memorial Parkway was located outside of the park in the Rainier National Forest. Plans to add the Mather Memorial Parkway and its surrounding lands to the park emerged after 1926; the year master planning of the park began. By the time the master plan was updated to reflect the boundary adjustment in 1931, the Mather Memorial Parkway had already been incorporated into the proposed system of scenic highways within the park. However, more than just being integrated within the park master plan, the pre-existence of the Mather Memorial Parkway as a 53-mile long regional road, actually factored into the NPS decision to abandon the “Round-the-Mountain” road concept in the 1926 master plan. Instead, the NPS favored a partial loop road system that heavily relied on regional roads outside of the park. The Mather Memorial Parkway was the key component of this new concept.

Naturalistic Design (Criterion C)

In association with significant design and construction, the Mather Memorial Parkway is an outstanding example of National Park Service landscape design, embodying the complimentary styles of rustic architecture and naturalistic landscape architecture. Based on eighteenth-century picturesque and nineteenth-century naturalistic design theories, the rustic and naturalistic styles were used extensively in NPS architecture and landscape architecture of the 1920s and 1930s. Designers in these styles aimed to harmonize artifice and nature by minimizing the visual impact of constructed developments, while accentuating the picturesque qualities of nature. Indigenous rock, lumber, and native plants were the basic materials for these styles, so that park architecture and landscape architecture would appear as natural extensions of the living landscape. Forms of the rustic and naturalistic styles were intended to be subordinate to the natural environment, and were to exhibit a hand-crafted or primitive appearance. This design era coincides with the most significant periods of development within NPS history, a time when the NPS created what is now recognized as the hallmark style for developments within natural areas, in order to preserve their scenic beauty.

During this period, NPS Director Stephen Mather was eager to influence the design of the McClellan Pass Highway (later named the Mather Memorial Parkway). Illustrating his concern for scenic preservation, Mather visited the road as it was under construction in the 1920s and advocated for the preservation of old growth forest along its length. Mather was particularly interested in sensitizing the Bureau of Public Roads (BPR) to the concepts of scenic preservation and landscape engineering in road design, and to prepare the BPR for designing roads in national parks. Mather was successful in his collaboration with the BPR. In 1926, a Memorandum of Agreement (MOA) signed by the NPS and BPR, established the framework for inter-bureau cooperation on national park road construction.

The MOA called for park superintendents and NPS landscape engineers to determine road alignment and road character, and in so doing ensured that park roads could be designed in the naturalistic style of landscape engineering, as advocated by Mather. In addition, the MOA called for the BPR to perform surveys, prepare construction drawings and manage the building of park roads. Under Mather's influence, the NPS adopted a naturalistic style of landscape engineering in parks, and through the NPS Division of Landscape Architecture in San Francisco, developed standard specifications for road construction. These standards covered an array of design concerns, such as the minimization of cut and fill, the "naturalization" of road shoulders, naturalistic rock cuts with revegetated fill slopes, the dressing of exposed culverts with stone headwalls to render them inconspicuous, and construction details for naturalistic retaining walls and guardwalls. The portion of the road extending from Cayuse Pass to Chinook Pass was designed with NPS standard stone retaining walls and crenellated stone guardwalls (Type 4). Additionally, NPS landscape architects added numerous vista turnouts that highlighted spectacular views of Mount Rainier and the surrounding Cascades scenery.

In 1931, following the death of Stephen Mather (who had tirelessly campaigned for the application of rustic design principles along the length of the route), the Secretary of Agriculture and the Secretary of the Interior announced that the Naches Pass Highway was to be renamed the Mather Memorial Parkway. With the January 1931 boundary adjustment, the NPS was able to

add finishing touches that reinforced the naturalistic character of the road inside the park. These finishing touches included the construction of a rustic entrance arch and overpass at Chinook Pass. Also, construction of a developed area at Tipsoo Lake was undertaken in 1933 and completed in 1936. The developed space included a parking area, two comfort stations and the arch described above. Landscaping work along the road corridor was undertaken by the Civilian Conservation Corps (CCC), which involved transplanting native plants to heal roadside scars. Later, in 1940, the erection of a rustic directional sign at the Mather Wye intersection marked the completion of NPS-directed construction along the Mather Memorial Parkway.

The design of the Mather Memorial Parkway 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 naturalistic construction details for retaining walls, guardwalls, and guardrails. Notable structures and features include the Chinook Pass Entrance Arch as well as numerous stone retaining walls and crenulated guardwalls situated along the road.

Today, the Mather Memorial Parkway remains largely unchanged and serves as an intact example of an early national park scenic highway. The road’s naturalistic character is evident in its remaining landscape characteristics and features, namely in the road’s spatial organization, its pattern of response to natural systems and features, circulation, land use, buildings and structures, small scale features, views and vistas, topography, and archeological sites. These patterns and their surviving features exist as originally planned, and convey the integrity of the road as a scenic highway. The road retains the following aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. For these reasons, the Mather Memorial Parkway is an outstanding example of early rustic period park roads.

Physical History

Prehistory - 1866

The Western Cascades were volcanically active approximately 20 to 40 million years ago. Virtually the entire route of the Mather Memorial Parkway crosses volcanic rocks, which were created during this period. The majority of the rock formations found between Enumclaw and Chinook Pass are dark andesites from the Ohanapecosh formation. Composed of a mixture of ash and rock fragments (known as agglomerates), these rocks formed as mudflow deposits. Between Chinook Pass and the mouth of the American River, the road passes pale volcanic rocks that belong to the Fifes Peak and Stevens Ridge formations, also part of the Western Cascades range.

A large part of the Mather Memorial Parkway passes through valleys that contained large glaciers during the last ice age, approximately 15,000 years ago. The road runs through the White River valley, an area filled with deposits of glacial debris ranging from a few hundred feet to two thousand feet deep. The glacier that filled this valley extended to the Puget Sound lowlands. One of the most recent major volcanic events at Mount Rainier occurred approximately 5,000 years ago with the Osceola mudflow. This event started when a large part of Mount Rainier's peak collapsed, creating a massive wall of mud that poured down the White River valley, before spreading across more than 100 square miles of the Puget Sound lowland near Enumclaw (Alt and Hyndman 2002: 126-155).

As early as 10,000 to 15,000 years ago, when Mount Rainier was largely draped in ice and permanent snow pack, Native Americans lived on the plains and valleys within its view (Burtchard 2003: personal interview). Between 8,500 and 9,000 years ago, the mountain's mid-slope settings became free of permanent snow pack, enabling the establishment of plant and animal communities similar to the modern subalpine parklands. By 4,000 B.P., Native Americans were hunting and gathering at several locations in the park, including Cayuse Pass, Sunrise and other mid to upper elevation landscapes.

Archeologists have established that an east-west route over the Cascades, in the area of Mount Rainier, has existed for at least 2,000 years. Prehistoric evidence reveals a trail route at Chinook Pass that linked Mount Rainier to the American River drainage and Yakama territory to the east (Burtchard 1998: 118 quoting Smith 1964: 229-238). Scholars believe that the Chinook Pass Trail (FS1996-11) may have been utilized for nearly 4,000 years, being used initially for foot travel and later, horse travel (Burtchard 2003: personal interview). Revealed by prehistoric archeological findings at Tipsoo and Deadwood Lakes, this trail served as a circulation link to hunting grounds as well as places of cultural importance at subalpine elevations. A 1915 park map indicates that the alignment of the Chinook Pass Trail followed the American River drainage, over Chinook Pass, north of Tipsoo Lake, west to Cayuse Pass, and northwest along the Klickitat Creek drainage towards Sunrise Ridge. In 1917, the Yakama people used this trail for the final time due to the implementation of NPS rules prohibiting hunting in the park. Today, physical traces of the Chinook Pass Trail can be seen from the Mather Memorial Parkway in the

vicinity of Chinook Pass and Tipsoo Lake (see the “Archeological Sites” section in Analysis and Evaluation for more information).

Early Road and Trail Development, 1867 - 1912

The need for a transportation connection from western Washington, over the Cascade Crest to eastern Washington was probably in demand by regional communities since the late 19th century. Due to the establishment of Mount Rainier National Park in 1899, there were a growing number of visitors seeking access to the northeast area of the park by automobile.

The earliest road surveys on the east 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, connecting with Paradise (Mills 1976: no page). The early “Round-the-Mountain” road concept, proposed by the Army Corps Engineer, Hiram Chittenden in 1907, may be traced to this period of early survey work. This concept was abandoned in the late 1920s, due to changing philosophies concerning the appropriate amount of road development in national parks and the immense difficulty of building a road on the steep topography of the west and north sides of the park. To provide the vital west-east link, the State of Washington proposed a route through national forest land that would connect Auburn in the west with Yakima to the east.

Mather Memorial Parkway Design, Development and Construction, 1913 - 1940

Initially referred to as the McClellan Pass Highway, the Washington State Department of Highways began road construction in 1913, with oversight provided by the Bureau of Public Roads. Located both inside and outside of park boundaries, the alignment of the proposed road started near Auburn, going through Enumclaw, following the White River and Klickitat Creek, over Chinook Pass to the summit of the Cascades, and down the American and Naches Rivers (Unrau 1992: 3). Mount Rainier National Park Supervisor, Dewitt Reaburn, recognized the potential influence of the McClellan Pass Highway on the future layout of a road network within the park, when he predicted that “...this link would spur road supporters to press for the extension of the government road (Nisqually Road) to Paradise to connect with the new road at Cayuse Pass” (HAER WA-25: 2).

Anticipating the construction of the McClellan Pass Highway, the park built a ranger station at the east entrance in 1915 (Superintendent’s Annual Report 1915: no page). Known as the [first] White River Ranger Station, NPS landscape architects sited the structure near the original park boundary along the western edge of the White River, approximately 1.6 miles downriver from the present White River Ranger Station. Between 1914 and 1916, the Mount Rainier Mining Company constructed a 28-mile long service road, called the Storbo Road, from Greenwater, north of the park, along the east and then north bank of the White River into Glacier Basin (Ripp 1999: no page). The Storbo Road was built to transport mineral ore mined from the Glacier

Basin locale to markets in the Puget Sound area. The road provided the first vehicular access to the northeast corner of the park, in advance of the McClellan Park Highway reaching this location. Approximately 12 miles of the Storbo Road were built within early park boundaries, from the first White River Ranger Station to the Storbo Mining Camp at Glacier Basin (Mills 1976: no page). The Storbo Road was paved with gravel and narrow, measuring 12 to 14 feet wide, with gradients varying from 2.5 - 13.5 percent (General Information Publication 1919: no date, www.nps.gov/mora/RDPPayne2/gi1919l.htm retrieved on 9/10/03). The NPS accepted maintenance responsibilities associated with the eastern three miles of the road, located within park boundaries, in 1916 (HAER WA-125: 2). In 1921, the Rainier National Park Company, the park's major concessionaire, developed the White River Campground. Accessed from the Storbo Road, the campground was 6.7 miles from the eastern entrance adjacent to the White River.

Between 1916 and 1918, the State continued construction of the McClellan Pass Highway between Greenwater and Dalles, approximately two miles north of the present-day park boundary. Between 1919 and 1925, the State began construction on a segment of road that would later become the Mather Memorial Parkway, which was located within the contemporary park boundary. By 1925, the 10-mile segment of road from Dalles to the [first] White River Ranger Station was completed. Upon completion of the road to the eastern park entrance, the McClellan Pass Highway was renamed the Naches Pass Highway in 1925. The Naches Pass Highway was aligned on a gentle incline within the lowland forest of the White River floodplain. Construction documents dating from 1927 to 1932 illustrate the Storbo Road and the new Naches Pass Highway alignment in the same general area. In several segments, the alignment of the Naches Pass Highway appears to have followed the alignment of the old road to where the Storbo Road crossed the White River (approximately 1.6 miles north of the current Mather Wye intersection). Today, traces of the Storbo Road remain; one section runs for several miles, extending approximately two miles south of the present-day northern park entrance.

By 1925, visitors were able to access the eastern park entrance via the Naches Pass Highway, rather than the Storbo Road (HAER WA-125: 2). At this time, the new road had just been surfaced with eight-foot wide travel lanes. Soon after completion of the Highway, approximately two miles of the road along the White River were damaged due to flooding. This section of the road was realigned, repaired and quickly reopened to traffic. The realigned road had new features, which included nine-foot travel lanes, one-foot paved shoulders, and a six-foot wide vegetated shoulder. In addition, log culverts were used along the road. In 1926, the BPR began planning construction of the eight-mile long section of the Naches Pass Highway, between the first White River Entrance Station and Chinook Pass. As construction of the easternmost segment of the Naches Pass Highway had already been completed from Yakima to Chinook Pass, this was the final stretch of road required to complete the route. A 1927 BPR survey laid out the route between the White River Ranger Station and Chinook Pass; over Klickitat Creek to Cayuse Pass, and then climbing steeply up to Chinook Pass via three switchbacks. At the same time, the BPR performed survey work for the Yakima Park Highway, linking the Naches Pass Highway with the NPS-planned rustic village at Sunrise. However, in 1927 work on the McClellan Pass Highway was stalled when the Chief Engineer resigned and no replacement was forthcoming.

In 1928, construction of the Naches Pass Highway resumed from what would later become the Mather Wye Intersection to Cayuse Pass. Climbing nearly 1000 feet in elevation, this segment of road ascended the Klickitat Creek drainage. Emerging from lowland old growth forests into montane forest, the road alignment yielded breath-taking views of the White River valley and Mount Rainier. The roadbed was supported by several long lengths of Type 4 BPR retaining walls. Many large concrete culverts were also constructed within the roadbed, allowing for the creation of numerous superelevations. Superelevations offered an alternative to bridges, which were frequently used in government road construction in the two preceding decades. For example, the Nisqually Road, built by the Corps of Engineers between 1905 and 1915, had numerous bridges at creek crossings. By the late 1920s, superelevated roadways were recognized as less expensive to build and maintain than bridges. The only concrete bridge constructed along the Naches Pass Highway occurred at Deadwood Creek, a deep lateral valley bisecting the alignment of the road. In addition, several other features were constructed along the road. Near Klickitat Creek, a 5 x 5-foot concrete box culvert with native stone masonry headwall, as well as two, 10-foot segments of log cribbing were installed near the culvert inlet. The final mile up to Cayuse Pass was aligned through a series of alternating rock cuts and superelevations. Skillfully carved rock cuts and intricate definition emphasized the naturalistic qualities of the landscape. During construction of the Naches Pass Highway, a secondary road was constructed near Ghost Lake, paralleling the main road's alignment and penetrating into the forest. This route led to a quarry that was used for the extraction of stone for road construction. It is likely that this secondary road may have followed the prehistoric Chinook Pass Trail in the Ghost Lake area.

As work began on the construction of the final eight miles of the Naches Pass Highway in 1928, Stephen Mather, NPS Director, participated in an inspection of Mount Rainier National Park. Mather was particularly interested in seeing the new road under construction. As early as 1921, Mather had advocated for improved inter-park travel, preservation of scenery for the enjoyment of travel, and the limitation of private development in scenic areas (Carr 1998: 147). As a result, Mather attempted to exert influence over the design of roads both within parks and their approach routes. Mather believed that these roads should be scenic highways, laid out using "landscape engineering" principals. Mather and his NPS staff coined this term to refer to a naturalistic design approach, which allowed the road to blend with surrounding scenery. Mather's administration worked tirelessly with the BPR at Glacier National Park in the mid 1920s to perfect this approach in the design of scenic highways. In 1926, Mather succeeded in forging an agreement with the BPR for the construction of roads in national parks. The Memorandum of Agreement (MOA) gave NPS landscape architects ultimate control of the naturalistic design style of park roads.

Mather's interest in the Naches Pass Highway was widely known by the time he visited the park in 1928. After inspecting construction activities along the road, he strenuously argued with the USFS, BPR and the State, that measures should be taken to preserve the 53-mile forest belt between Enumclaw and Naches. Mather believed that integrated master planning could preserve the picturesque scenery along the road corridor (McIntyre 1952:1). Since the park implemented its master plan in 1926, the NPS had also explored the idea of acquiring national forest lands east of the park, to expand the park boundary to the crest of the Cascade Mountains.

Mather's proposal for scenic preservation along the highway, and the quality of its construction was eventually realized when an 11-mile segment was included in the 1931 boundary extension.

In the fall of 1929, reconstruction work on a three-mile section of road south of the Mather Wye Intersection was completed. The improved road was widened to provide a 26-foot road bench and a small wooden bridge was replaced with a fill-through. In the same year, construction began on the remaining four miles of the Naches Pass Highway from Cayuse Pass to Chinook Pass. The road was aligned to skirt Cayuse Pass and then gain 700 feet in elevation, incorporating three switchbacks on the south side of Yakima Peak. In order to traverse the steep slopes, large segments of the road were supported by tall stone retaining walls and Type 4 guardwalls. Constructed using massive, locally-cut stone, the new guardwalls included distinct raised mortar joints and short crenellations, just three-inches in height. Additionally, emphasis was given to the crenellation through a raised profile on both the front and rear faces of the guardwall. This created more texture to the vertical profile of the guardwall. One stretch of retaining wall was 300 feet long and approximately 40 feet high. The retaining walls were constructed with irregular, uncoursed masonry, tooled and fitted together, with a graduating scale of unit size, ranging from large stones at the base of the wall to smaller stones near the top. Between Chinook Pass and Cayuse Pass, segments of guardwall were interspersed with berms. The berms punctuated the rhythm of the guardwalls, providing diversity and enhancing the naturalistic character of the built features. In an effort to re-route drainage between the middle and lower switchbacks, a three-foot tall and 20-foot long masonry wall was installed. This wall guided the water into paired three-foot diameter concrete culverts that were sheathed in a mortared masonry headwall. Also, three retaining walls were constructed on the cut side of the road in the upper section just below Chinook Pass. Using large semi-hewn stones laid in irregular courses, the walls incorporated a semi-circular recess, which enabled small creeks to run down their face into culverts. Construction of the route between Cayuse Pass and Chinook Pass involved blasting and chiseling through exposed bedrock to create rock cuts for the road bench. The rock cuts in the lower section were particularly extensive and skillfully shaped to create a naturalistic appearance. At Tipsoo Lake, the road was aligned to round the larger lower lake for one-half mile and skirt immediately north of the small upper lake. A five-foot concrete culvert with a mortared masonry headwall at the inlet was constructed to connect the natural drainage of the two lakes. By 1931, the seven-mile section between the Mather Wye Intersection and Chinook Pass was close to completion.

Alignment revision drawings, dating as late as 1931, confirm that construction of the Mather Wye Intersection was probably one of the final segments of road to be completed. Three, 24-inch concrete culverts were located across the wye, at the north, central, and south ends of the junction. Several large concrete box culverts were constructed to handle heavy perennial drainage. Crystal Creek received a 10 x 8-foot concrete box culvert with a native stone masonry headwall. Also, in the vicinity of Crystal Creek, was a road maintenance and construction staging area that contained an explosives cache, materials stockpile and a small building.

As road construction continued, Stephen Mather passed away in 1931, during construction of the Cayuse to Chinook Pass section of the highway. Regardless of his untimely death, Mather's goal to expand the park was realized with an Act of Congress extending the boundaries of Mount

Rainier National Park as far east as the Cascade Crest. This boundary adjustment brought 11.6 miles of the Naches Pass Highway into park jurisdiction. The road was surfaced with bituminous asphalt in 1932, prior to the official opening ceremony. At the opening ceremony, the road was designated as the “Mather Memorial Parkway” by the Secretary of the Interior in honor of the late national park director and parkway advocate, Stephen Mather.

CCC-Era

The onset of the Great Depression and the establishment of the Civilian Conservation Corps (CCC) as an emergency relief organization provided the park with an opportunity to employ a large labor force during the 1930s. The CCC was an organization of young, unmarried men who were managed by the War Department. While the primary mission was to put young men to work performing conservation activities, the CCC played a major role in constructing a rustic style infrastructure in national parks between 1933 and 1941. Mount Rainier National Park was no exception. Hundreds of CCC projects were performed in the park during this period, including many along the Mather Memorial Parkway and other roads in the park. Projects included revegetating the cut and fill banks of roads to cover scars, as well as constructing built features, including guardwalls, comfort stations, trails and entrance gates. In 1933, a CCC crew established a spike camp at Crystal Creek beside the Mather Memorial Parkway. One of their first projects was to build a trail from Crystal Creek to Crystal Lake. Also at Crystal Creek, the CCC built a stone masonry drinking fountain at the end of a turnout. The fountain had a large basin with several rills and cascades. Another CCC crew, stationed at the White River Campground, performed roadside cleanup and shoulder revegetation work along the Mather Memorial Parkway. In addition, this crew also constructed the rustic style Chinook Pass Entrance Arch.

The Chinook Pass Entrance Arch was part of a development plan for the Tipsoo Lake area. This developed area was designed in 1933 by the NPS Branch of Plans and Design, and was intended to provide an array of visitor services for the new entrance of the park. In this location, Superintendent Tomlinson envisioned a grand entrance, a ranger station to provide visitor contact, three comfort stations and several turnouts with scenic overlooks of both Tipsoo Lakes and Mount Rainier. Unfortunately, this vision was not realized in its entirety. Ultimately, a CCC labor force was used to implement a scaled-down version of Tomlinson’s vision: the Chinook Pass Entrance Arch with a trail overpass, a parking area and two comfort stations around upper Tipsoo Lake. Structures were built of locally quarried stone, or a combination of whole logs and stone in the rustic style of architecture. In 1935, Boyd Leedy, Project Superintendent at the White River Camp, reported that the CCC labor force had planted 532 trees and shrubs in the vicinity of Tipsoo Lakes. In addition, 1,944 square yards of sod were laid, obliterating numerous trails and old road traces and scarred hillsides around the lake.

In 1934, a 1.7-mile segment of road, beginning at the northern entrance was reconstructed due to flood damage caused by the White River. The BPR realigned this section of the road, clearing and grading a route approximately 100 feet uphill from the old segment. This project was completed in 1935 when the Washington Department of Transportation repaved this section of road. In 1937, work began on replacing Deadwood Creek Bridge with a single spandrel bridge designed by the BPR. The new bridge was constructed with exposed concrete guardwalls,

sidewalks and curbs, which was contrary to the rustic design style prevalent along the road. By 1938, J. Haslett Bell, the park's resident landscape architect, reported that the bridge construction work had been completed. However, the surrounding slopes were badly scarred and bare of vegetation. In line with naturalistic design principles, Bell advised that "additional funding be secured immediately to stabilize the road; revegetate cut slopes above the grade for a distance of about 150 feet each way from the bridge, to surface roadside parking areas and to give a fine finish to the whole site." In addition, Bell noted that there was an excellent view of Mount Rainier from the bridge.

In 1940, a stone directional marker, designed by the NPS Branch of Plans and Design, was erected at the Mather Wye Intersection. The marker featured massive cut stones, routed wood road signs and two metal engraved panels indicating the direction to "Seattle" and "Yakima". The installation of the marker coincided with the official completion of the East Side Highway in June 1940, connecting the Mather Memorial Parkway at Cayuse Pass with the southern entrance at Ohanapecosh. These roads now provided a vehicular north-south route through the park.

Maintaining the Mather Memorial Parkway, 1941 - Present

While the boundary adjustment brought 11.6 miles of the Mather Memorial Parkway within the park, the road retained its state route designation. With the State responsible for maintaining the road, officials initially decided not to plow the road during winter months. However, during the late 1930s and 1940s, the Cayuse Pass and Tipsoo Lake areas became popular with a growing number of winter sports enthusiasts (MORA archives). With pressure from local ski clubs, the State rescinded their initial decision and began plowing the Cayuse Pass section of road in 1938. Compared with Paradise's winter recreation area, it proved to be a more accessible destination for motorists traveling from Tacoma and Seattle. Due to the inaccessibility of proper sanitary facilities, however, park officials became concerned with the new recreational uses at the location. Despite park concerns, visitors continued to use Tipsoo Lake as a popular winter recreation destination through the 1930s and 1940s. In 1936, initial use of the Mather Memorial Parkway was restricted exclusively to passenger vehicles weighing less than 5,000 pounds. Furthermore, by an executive order from the State Director, the road was to be used only for pleasurable travel. As the volume of visitors increased, partly due to the development of the winter recreation areas, the State altered the restrictions in 1947 to allow buses. From 1946 to 1950 rope tows were installed and operated between Cayuse Pass and Tipsoo Lake, making the area's skiing "as equally good as Paradise" (Helleson no date: 19, quoting Superintendent's Annual Report 1948: no page). Competition from nearby ski resorts, such as Crystal Mountain, diminished the popularity of Tipsoo Lake as a ski destination in the early 1950s. By the end of the decade, organized skiing facilities in this area had been closed.

Mount Rainier was the first national park to have a development plan under the "Mission 66" program of 1956 to 1966 (Cotton 1996: 471). Mission 66 was a 10-year capital improvements program that was inspired by NPS Director Conrad Wirth that started in 1956 with the completion goal of 1966, the 50-year anniversary of the NPS. As the NPS Director in December 1951, he witnessed booming park visitation, which was offset by the deterioration of resources. With its proximity to a major metropolitan area, Mount Rainier was no exception. The physical

development that resulted from the Mission 66 program involved the construction of roads, camping grounds, picnic areas, sanitary facilities, housing, and visitor centers. The major effect of Mission 66 on the Mather Memorial Parkway was the alteration of the roadbed to 11-foot wide travel lanes. This change did not increase the size of the roadbed; rather, the shoulder width was reduced to compensate for the increased width of the travel lanes (i.e., the formerly nine-foot wide travel lanes with three-foot shoulders were adjusted to 11-foot wide travel lanes with one-foot shoulders). The Washington State Department of Transportation (WSDOT) performed the repaving and restriping work. In addition, WSDOT installed low log guardrails or edge delineators along a large portion of the northern route of the road, and COR-TEN® Steel W Rail along the extreme westerly part of the Cayuse to Chinook Pass segment. The log edge delineators were only 12-inches in diameter, bolted to precast concrete pier blocks. Both the edge delineators and COR-TEN® Steel W Rails replaced the former log guardrails. Another minor Mission 66 project was the development of an existing turnout south of the Mather Wye intersection with an interpretive sign and guardrail. The turnout, which became known as the Mather Memorial Overlook, was extended to accommodate more than five vehicles and an interpretive wayside panel was installed on top of a stone pilaster and wood guardrail.

In 1977, the NPS constructed the north entrance arch on the Mather Memorial Parkway at the northeast boundary of the park. This structure was the last entrance arch to be built and was constructed with peeled cedar logs to create a large portal. In keeping with other contemporary entrance arches found within the park, it was modeled after the historic Nisqually Entrance Arch.

In the early 1990s, the Deadwood Creek Bridge was severely damaged by a land slide and was replaced with a single span bridge with concrete girders. The new bridge was similar in design to the Laughingwater Creek Bridge on the Eastside Highway. Unlike their predecessors, each bridge had guardwalls and no sidewalks. Rather than replace the exposed concrete finishes of the guardwalls in the former bridges, the NPS used a relatively new material treatment in order to blend the appearance of the walls with their natural surroundings. The new Deadwood Creek Bridge was constructed with guardwalls of simulated stone. The simulated stone was created by pouring concrete into a molded form liner, which had the impression of cut stone masonry. After curing the concrete and removal of the form liner, the molded concrete was painted to simulate the color of native stone. The simulated stone guardwalls lacked crenellations and also lacked the picturesque qualities and craftsmanship of the authentic stone guardwalls located along the road; however, the appearance that was created was arguably more naturalistic than the original cast-in-place concrete walls.

In 1997, the Mather Memorial Parkway was included in the National Historic Landmark District (NHLD) designation for Mount Rainier National Park. The NHLD nomination noted that the centerline of the road still followed the historic alignment and the majority of the historic structures had been retained. The report stated “since almost all of the original structures associated with the road are original, the road can be said to have excellent integrity overall to the period of significance” (NHLD Carr: 7).

By the early 1990s, the condition of the Mather Memorial Parkway had deteriorated and the road was in need of rehabilitation. The section of road between Cayuse Pass and Chinook Pass was

recognized as being in particularly poor condition. After a great deal of planning and the development of design guidelines in 1998, the Federal Highway Administration (FHWA) began oversight of the road's rehabilitation. The first segment of the project began near the first switchback, east of Cayuse Pass, leading up to Chinook Pass. Completed in 2001, the project involved minor road realignment, rebuilding of the road bed, repairing or replacing mortared retaining walls, the replacement of stone guardwalls with taller, stone-veneered guardwalls and the addition of new guardwalls. The design of the replacement masonry features generally matched the historic features. The new features could be distinguished from the historic through the taller height of the new guardwalls at 27-inches, rather than 24-inches and the use of stone veneer with smaller stones than the original masonry in the guardwalls and retaining walls. However, attention was paid to retaining the particularly small size of the original crenellations of the BPR Type 4 wall in the new walls, and their distinct back projections from the main body of the wall.

The Tipsoo Lake parking area was also repaved during the FHWA project. During repaving, the original boulder edging around the pavement was retained and the bank of a drainage swale on the west side of the parking area was stabilized with rock. After repaving, the parking area was restriped with a new pattern to accommodate recreational vehicles and accessible parking spaces. Granite cut stone parking delineators were also added.

Additionally, the Washington State Department of Transportation (WSDOT) performed pavement rehabilitation on a 2.4-mile section of State Road (SR) 410 near the park boundary during the fall of 2003. In the same year, the park installed a vault toilet at the lower end of the parking area, adjacent to the vegetated island. The vault toilet was sheathed in cedar shingles, lap siding and cut stone masonry veneer. It was open to visitors as a universally accessible comfort station in summer 2004. The most recent pavement rehabilitation on SR 410 was completed in September 2005. This repaving project included a 5.42 mile section of road from approximately 1/4 mile north of Cayuse Pass. Since completion of this project in 2005, Highway 410 has undergone little change.

A winter storm in 2005 inundated the road within a mile of the north park entry. Aggradation of the bed of the White River has raised the riverbed higher than the road in this area. To prevent further inundation, WSDOT was permitted by the park to install a 500-foot long rock-faced concrete block dike along the west shoulder of the road in spring 2005. Long term climate change, glacial recession and subsequent debris flows are causing river aggradation throughout the park. Along SR 410, the rising riverbed of the White River continues to threaten the road. In the northern three miles of the road, the White River bed is more than 10 feet higher than the road in some segments.

Avoiding damage associated with a November 2006 storm, today, SR 410 remains in fair condition, while many roads within Mount Rainier National Park are in poor condition. During this destructive storm, the park received approximately 18-inches of rainfall in 36 hours. Rivers and streams overwhelmed their channels, causing a great deal of damage to park roads. As a result of this storm episode, several miles of Highway 410 were inundated with water; however, the road did not sustain any significant damage. The long-term issue of river aggradation

remains a threat, however, and may ultimately result in the need to raise the vertical alignment of the road.



Historic photo showing view of Mount Rainier with Type 4 guardwall on fill side of road, 1935 (MORA Archives).



Historic photo showing the recently completed Chinook Pass Entrance Arch, 1937 (MORA Archives).



Historic photo showing the single spandrel arch on the original Deadwood Creek Bridge, 1938 (MORA Archives).



Historic photo showing masonry drinking fountain at the Crystal Creek turnout. Note small stone seat on the right side of the fountain, 1939 (MORA Archives).



Historic photo showing a rock cut with overhang on the Mather Memorial Parkway, 1939 (MORA Archives).

Analysis and Evaluation

Summary

The Mather Memorial Parkway is an example of an early National Park Service scenic highway, and an integral part of the extant early master plan for the park. The road is distinguished by outstanding engineering achievements and features of naturalistic design. The historic character of the Mather Memorial Parkway is evident in the remaining landscape characteristics and features: spatial organization, natural systems and features, circulation, topography, land use, buildings and structures, small scale features, views and vistas, vegetation, and archaeology. These landscape characteristics and their associated features still convey the physical character of the road as it was designed and constructed between 1919 and 1940.

Spatial Organization: NPS landscape architects designed the road to lead visitors through a planned sequence of events at a relatively slow-paced, comfortable traveling speed. The alignment of the Mather Memorial Parkway, along with the location of the turnouts and numerous small-scale features and structures were carefully chosen in keeping with the principals of naturalistic landscape design to maximize visitor experience. Despite the minor changes that have occurred to the roadway due to the action of natural processes such as landslides and flooding, the road follows the same original alignment.

Natural Systems and Features: The response to natural systems is evident in all aspects of the design of the Mather Memorial Parkway. In keeping with the tenets of naturalistic landscape engineering, the road was designed to fit the natural landscape, minimizing cut and fill, grading slopes to blend with surrounding topography, and emphasizing views of rivers, canyons and mountains. The sensitivity with which the design of the road responds to natural systems and features in the landscape is evident today in the alignment, dimensions, materials, and craftsmanship of the highway and its associated features.

Circulation: The primary circulation patterns and features of the Mather Memorial Parkway have changed little since the road was completed in 1932. Serving as a scenic highway as well as a seasonal state connecting route, the road begins at the Chinook Pass Entrance and terminates at the north entrance of the park. Along the route, turnouts provide visitors access to many scenic and popular destinations such as Tipsoo Lake, Crystal Peak Trail, Mather Overlook, White River and a number of backcountry trailheads. Overall, the major circulation patterns and features have been retained since the road's completion. The major components of circulation, including cross section, design speed, intersections, turnouts and trailheads retain integrity and contribute to the significance of the Mather Memorial Parkway.

Topography: The manipulation of natural topography occurred along the entire length of the road and is still evident throughout. Beginning at Chinook Pass and ending at the north entrance arch, the Mather Memorial Parkway traverses some of the most rugged terrain found within the park. During construction, a substantial effort was made to minimize the visual disturbance by blending the highway's bench with its surrounding environment. The manipulation of topography along the Mather Memorial Parkway is evident in its constructed features, which

include rock cuts, cut/fill and berms. Recent minor changes to the road alignment and road prism have altered the historic character and topography. Despite these changes, the remaining topographic features contribute to the significance of the Mather Memorial Parkway.

Land Use: Historic land use patterns associated with the road design are still evident and effective today. The Mather Memorial Parkway was conceived primarily as a scenic park highway, but also functioned as a principle route through the park connected to a larger regional road system. Today, the road still functions as a scenic park road allowing visitors to access popular destinations within the park and is part of the larger regional transportation route, state highway (SR 410), connecting Tacoma with Yakima.

Buildings and Structures: The Mather Memorial Parkway has no associated historic buildings; however, there are numerous historic structures situated along the road. The historic structures were designed and constructed in the rustic style, which emphasized the blending of built works into their setting. Use of native materials, along with strict design principals and construction standards, ensured that the structures blended with the scenery, matching the color and character of natural rock outcrops and surrounding terrain. The attention to detail and adherence to naturalistic design principles is still evident throughout the road. Contributing structures located along the highway include the Chinook Pass Entrance Arch as well as numerous guardwalls and retaining walls.

Small Scale Features: Significant small scale features, located along the Mather Memorial Parkway include culverts with headwalls as well as directional signage. These features were designed and constructed as part of the overall effort to blend the road with the local surroundings. Today, the road retains many of the culverts that were designed and built as part of the original road construction. However, other historic small scale features have been replaced with incompatible contemporary features, including the replacement of wooden NPS signs with metal or fiberglass signs. With the exception of modern signs, the majority of the features retains a high degree of integrity and contributes to the significance of Mather Memorial Parkway.

Views and Vistas: Like many of the scenic roads that traverse the dramatic terrain of Mount Rainier National Park, the Mather Memorial Parkway provides visitors spectacular views of surrounding mountains, ridges, valleys, rivers, as well as built features like retaining walls, rock cuts and human-made waterfalls. Not surprisingly, these extraordinary views were thoughtfully incorporated into the road design by NPS landscape architects in the 1930s. Overall, 19 views and vistas are identified as historic features that contribute to the road.

Vegetation: Vegetation is a major character-defining feature of the Mather Memorial Parkway. The highway travels through a diverse range of forest associations from Chinook Pass down to the White River valley. Historically, native plants were often used in a supporting role as screens to block an undesirable element from sight, as naturalistic remediation tools with which to reverse the negative effects of road construction, or as framing devices to define and accentuate particular views. Single or grouped specimens were often preserved during road

construction in order to become natural attractions along the route. Today, specimen trees are an important aspect of the roads historic character.

Archeological Sites: A total of 10 documented archaeological sites exist within the Mather Memorial Parkway road corridor. These include segments of the Chinook Pass Trail, two historic areas associated with Highway 410, the Tipsoo Lake Comfort Station foundation, the White River Entrance Road, two quarry sites, remnants of Cayuse Camp and Cayuse Historic Rock Shelter and a prehistoric culturally modified cedar. Based on their close association with the historic development of the road, these archeological sites contribute to the significance of the Mather Memorial Parkway.

Integrity

Today, the Mather Memorial Parkway is an intact example of an early national park scenic highway, serving as an integral part of the extant early master plan. In the last thirty years there have been alterations to the road, including the replacement of Type 4 stone guardwalls below Chinook Pass, the addition of a stone pilaster and wood guardrail at the Mather Overlook, and the construction of a wood arch at the north entrance. These alterations, although they are non-contributing features, are compatible with the style of rustic architecture practiced by NPS landscape architects in the 1920s and 1930s.

Alterations to the road that are incompatible with the rustic style, include the replacement bridge at Deadwood Creek, the addition of COR-TEN® W steel guardrail above Cayuse Pass, log delineators north of the Mather Wye, a section of Jersey barrier near Deadwood Creek Bridge, as well as the guardrail, concrete paving and extended turnouts around Tipsoo Lake. These modern features detract from the historic character of the road. In addition, the widening of the road bench in recent years has led to large segments of the route incorporating a 15-foot clearance zone on the fill side of the road. This is due to maintenance practices that have extended the length of turnouts, increased the depositions of slide material on the fill slope and cleared vegetation from the road shoulder. If these practices continue, they will greatly impact the historic character of a nationally significant scenic park highway.

Despite the aforementioned changes, the road's naturalistic character is still evident in the remaining landscape characteristics and features, namely in the road's spatial organization, the pattern of response to natural systems and features, the intact land use, the topography of its road prism, structures, small scale features, views and vistas and archeological sites. These patterns and their surviving features, such as the Chinook Pass Entrance Arch, Type 1 stone guardwalls, rustic retaining walls, turnouts, rock cuts, views, specimen trees and the narrow curvilinear alignment, continue to exist as originally planned, and convey the integrity of the road as a scenic highway.

Spatial Organization

The Mather Memorial Parkway is an integrated design that includes physical features and experiential attributes, which are organized into a sequential experience. The spatial organization of the highway is therefore best understood as the way the road interacts with its immediate environment. From a design perspective, the alignment of the road takes advantage of natural topography along the Mather Memorial Parkway, creating a diverse driving experience and affording a variety of vantage points for viewing the surrounding landscape. NPS landscape architects designed the road to lead visitors through a planned sequence of events at a relatively slow-paced, comfortable traveling speed. This ensured a safe driving experience through a diverse array of scenic attractions on the east side of the park. The road was also designed with turnouts to provide visitors access to many scenic and popular destinations such as Tipsoo Lake, Crystal Peak Trail, Mather Overlook, White River and a number of backcountry trailheads.

The highway is characterized by three segments. The first portion, the eastern segment of the road, incorporates three switchbacks that negotiate the steep terrain between Chinook Pass and Cayuse Pass and includes the Tipsoo Lake Developed Area. The middle segment descends steadily from Cayuse Pass, crossing Deadwood Creek and Klickitat Creek until the intersection with the Yakima Park Highway (Mather Wye). Finally, the northern segment of the road winds gently along the floor of the White River valley through dense forest to the north entrance arch.

Individual segments of the road alignment have been modified over the years. Despite these changes, the historic design intent is still evident in the configuration of the road. Today, the highway largely follows the alignment that was laid out in the late 1920s and visitors are still able to enjoy the spectacular views of Mount Rainier that characterized the road after it opened in 1932. The historic spatial patterns along the road have been retained and contribute to the significance of the Mather Memorial Parkway.

Chinook Pass to Cayuse Pass Segment:

The Mather Memorial Parkway enters the park at Chinook Pass winding through the subalpine meadows at the Tipsoo Lake Development Area. Today, the Tipsoo Lake Developed Area, associated with the eastern segment of the road and the Chinook Pass Entrance Arch, includes turnouts with scenic views, vehicle parking as well toilet facilities. Originally planned to provide an array of visitor services for the new entrance of the park, Superintendent Tomlinson envisioned a grand entrance, a ranger station, three comfort stations and several turnouts with scenic overlooks in this location. Unfortunately, this vision was not realized in its entirety. Ultimately, a CCC labor force was used to implement a scaled-down version of Tomlinson's vision: the Chinook Pass Entrance Arch with a trail overpass, a parking area and two comfort stations around upper Tipsoo Lake.

From an elevation of 5,432 feet at Tipsoo Lake, there is a dramatic drop in elevation as the road descends down the south side of Yakima Peak. In this segment, the road is aligned to drop 700 feet in elevation through a ladder of three switchbacks down to Cayuse Pass. The three miles of road between Chinook Pass and Cayuse Pass, maintains a steady gradient of six percent as it hugs the face of the mountain-side. After the second switchback, the road passes through a high

rock outcrop via two reverse curves before revealing a wide panoramic view of Mount Rainier. As the road continues to descend the steep southern slopes of Yakima Peak there are panoramic views of the Chinook Creek drainage and additional views of Mount Rainier.

Cayuse Pass to Mather Wye Intersection:

After Cayuse Pass, the road gradually descends into the White River valley traversing the lower slopes of Crystal Mountain through a series of radial curves and relatively straight sections. The route maintains a steady grade, measuring between four and six percent. From Cayuse Pass down to Klickitat Creek, the road is enclosed as it passes through montane forest on steep fill slopes and battered rock cuts. The road emerges into open segments between Klickitat Creek and Deadwood Creek as it traverses slide zones and major rock cuts. After Deadwood Creek the grade decreases, with steep fill slopes affording panoramic views of the park to the east. One of the primary views associated with this segment of road is at the Mather Overlook, which extends up the White River valley towards the summit of Mount Rainier.

White River valley Segment:

In the final segment, the grade reduces to approximately two percent as the road winds gently along the valley floor towards the north entrance arch. Here, the road parallels the east bank of the White River with gentle curves breaking the monotony of the straight sections. Brief openings through the forest provide views of the White River. For the last three and one-half miles, the road is enclosed as it passes through old growth forest. Old growth trees, retained during construction, occasionally grow as specimens along the road shoulder and include Western hemlock, Western red cedar and Douglas fir.



Graphic showing the alignment of the parkway and important features along its route (MORA, 2004).

Natural Systems and Features

The NPS design objectives of the 1930s are still visible along the Mather Memorial Parkway and as a result, the entire corridor and associated features still respond to the natural 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, with slopes graded and contoured to blend into the hillsides. 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 instance, rock cuts, scarred from dynamiting and drilling, were crafted to recreate the natural stratification of the rock and provide overhangs. Salvaged stone from the project was used to construct built features such as retaining walls, which also allowed the road corridor to blend into the surrounding landscape. Methods of bank stabilization included the construction of stone retaining walls with guardwalls atop and revegetation of disturbed areas using native plant materials. Additionally, park specifications indicated that, “bright construction debris should be removed and logs covered with mosses and lichens are to be left in place” (HAER WA-124 1992:6). NPS specifications also called for the preservation of large trees along the road corridor on the shoulder of the road or on the steep fill slopes, especially between Cayuse Pass and the Mather Wye.

Today, the road corridor retains many of the turnouts, specimen trees, and rock cuts that were constructed or preserved in the 1920s and 1930s. 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 in the 1930s. Large specimen trees still stand in the shoulder of the road or on the steep fill slopes. They are an integral part of the Mather Memorial Parkway, integrating the road with the surrounding landscape. In addition, many rock cuts have now blended with the natural landscape to a point where only close inspection reveals whether they are natural or constructed features.

However, changes to the road have affected its naturalistic design character, including the widening of the road bench and the construction of 12 modern turnouts. Periodic flooding and landslides have also impacted the historic character of the road. For instance, high volumes of water damage historic culverts and many are blocked due to the build up of debris around the headwalls. In several places where landslide zones cross the road, particularly at Big Bertha, the shoulder has been enlarged due to the gradual accumulation of slide material. (Big Bertha is an avalanche shoot, which resulted from record snowfall during the 1998-1999 winter season.) In addition, the installation of structural features, such as additional guardrail, has been to the detriment of the road’s historic character. The replacement guardrail, including the log delineators, Jersey barrier and COR-TEN® W Steel Railing does not blend with the adjacent natural features. In spite of these changes, the road corridor and the majority of its associated structures still blend with the surrounding landscape, contributing to the significance of the Mather Memorial Parkway.



Contemporary photo showing integration of road with the natural surroundings through a rock cut above Cayuse Pass, 2004 (MORA).

Circulation

Design Principles

The Mather Memorial Parkway is unique in that it serves as both a state route and as a scenic highway. While state highways are designed to accommodate more traffic at higher speeds, the Mather Memorial Parkway was primarily intended to meet the needs of visitors viewing scenery and stopping at developed areas and trailheads throughout the park.

Due to the abundance of outstanding natural features that can be viewed when traveling the route, the Mather Memorial Parkway can be classified as a scenic highway where driving is referred to as a leisure activity. In addition, turnouts along the road provide visitors access to many scenic and popular destinations such as the Tipsoo Lake, Crystal Peak Trail, Mather Overlook, White River and a number of backcountry trailheads. The secondary function of the parkway is as a seasonal state connecting route. In this capacity, the road provides access between Tacoma and Yakima, generally between May and November.

Overall, the major circulation patterns and features have been retained since the road was completed in 1932. The major components of circulation, including cross section, design speed, intersections, turnouts and trailheads retain integrity and contribute to the significance of the Mather Memorial Parkway. These components of circulation are described in greater detail in the following paragraphs.

Cross Section

The Mather Memorial Parkway traverses rugged and varied topography, which influences how the road bench negotiates the natural features, including rock outcroppings, creeks and talus slopes. On the steep exposed slopes between Chinook Pass and Cayuse Pass, the cross section hugs almost vertical cliff faces. In this segment, the steep rock cuts require long sections of retaining wall to support the road bench. In other segments, naturalistic rock cuts define the cut slopes, blending with adjacent natural rock outcroppings. The rock cuts create a foil to the panoramic views beyond the fill side of the road. In the segment between the Mather Wye and the north entrance arch, a dense canopy of old-growth forest lines the route with large specimen trees located on 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 glacial till, talus or naturalistic rock cuts. Rock cuts have sculpted, vegetated crowns that dissipate water and reduce erosion. The fill side consists of either a glacial till, talus or vegetated slope and is occasionally 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 in the northern segment where the road crosses minor creeks and wetlands. The road bed is raised up to 15 feet above the surrounding ground, while maintaining a steady grade of between two and four percent. Also less common, but still typical, are the segments of highway that cut through exposed bedrock, i.e. the road is benched out of bedrock.

In these segments, such as below the first switchback above Cayuse Pass, driving through the facing rock cuts creates a dramatic effect that adds to the experiential qualities of the road.

The cross-section of the Mather Memorial Parkway features a striped centerline, two 11-foot travel lanes and a striped fog line at the exterior edges of the travel lanes. The typical fill side shoulder has a one-foot paved edge with a fill slope below that varies in grade. Generally, the topography between Chinook Pass and the Mather Wye dictates a steep fill slope angle and the range for the entire length of the road is specified between 1½:1 to 4:1. The typical cut-side shoulder is also one-foot wide with a four-foot wide ditch that averages 1.8-inches in depth. Between Chinook Pass and Cayuse Pass the ditch on the cut side of the road has been modified. The width of the modified ditch has been increased by three feet and the depth has been reduced for maintenance purposes. The angle for the cut slope varies. In the Chinook Pass to Cayuse segment, the rock cuts are often vertical and occasionally overhang the road. The rock cuts in the segment between Cayuse Pass and the Mather Wye tend to match the gradient of the slopes on the fill side of the road, between 1½:1 to 4:1. In the northern segment, the angle of the cut slope is reduced as the road winds along the valley floor.

Over the years, an almost imperceptible change has led to large segments of the route incorporating a 15-foot clearance zone on the fill side of the road. Maintenance practices have extended the length of turnouts, increased the depositions of slide material on the fill slope and cleared vegetation from the road shoulder. These practices have all contributed to the widening of the road shoulder, and if they continue will greatly impact the historic character of a nationally significant scenic park highway. However, overall, the cross section of the road retains a high degree of integrity and contributes to the significance of the Mather Memorial Parkway.

Design Speed

The design speed of the road ranges between 20 miles per hour at the switchbacks above Cayuse Pass to 50 miles per hour in the northern portion. The design speed along the northern segment of the road may have increased slightly, but as a whole, it remains virtually the same as the day it opened. The segment between Chinook Pass and Ghost Lake has a slower speed limit that is posted at 35 miles per hour. The slower speed limit in the segment between Chinook Pass and Ghost Lake is related to the radial and tangential curves that predominate, as well as the steep slopes associated with Yakima Peak. The northern segment is characterized by gentle tangential curves and straight sections. In addition, the straight sections allow for occasional use of a dashed centerline, encouraging vehicular passing. The straight sections, gentle curves, and passing lane allow for an increase in the posted speed limit to 50 miles per hour.

Exceptions to the general speed limits occur in relation to switchbacks, radial curves associated with steep fill slopes and intersections. The switchbacks are located between Chinook Pass and Cayuse Pass on the southern slopes of Yakima Peak. Here the speed limits are restricted to 20 miles per hour. Traffic is also slowed as vehicles approach the radial curves in the Ghost Lake area with speed warnings posted at 25 miles per hour. At the Mather Wye, the speed limit is reduced to 35 miles per hour in an area where dense forest cover reduces sightlines. The varying design speeds induced by road alignment, varying site line distances and elevation change retain a high degree of integrity.

Intersections

There are two major intersections along the Mather Memorial Parkway. The first intersection is located at MP 3.517 where the road intersects with the Eastside Highway at Cayuse Pass. The only change since the period of significance associated with this historic wye intersection is the addition of stop signs to improve safety. The other junction, known as the Mather Wye, is located at MP 7.038 where the road intersects with the Yakima Park Highway. This intersection was originally built in a wye configuration that is still extant today. While the wye configuration still exists, the paved surface was striped as a tee intersection to improve safety. In addition, a stop sign was added for the eastbound Yakima Park Highway traffic. Despite the safety improvements to the wye intersections, they are still contributing features.

Turnouts

The presence of numerous turnouts provides visitors with ample opportunities to view the wide variety of natural landscapes associated with the road. In addition, turnouts are also associated with trailheads, rock cuts, passing areas and the Tipsoo Lake Developed Area. The more typical turnouts for the Mather Memorial Parkway 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 feet to 100 feet long, and may be associated with rock cuts and occasionally trailheads. The turnouts associated with rock cuts are generally longer than typical turnouts, providing additional parking for more visitors. The turnouts have gravel or paved surfaces and are often constructed using 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.

Today, 25 out of 47 existing turnouts have been modified from their historic configuration. Generally, the length and width of the modified turnouts has been extended. Consequently, the form has also been altered, creating a trapezoidal shape. In addition, all of the turnouts associated with the Tipsoo Lake Development Area were built as part of the 1998 road rehabilitation project and replaced the historic turnouts. These turnouts are longer than the historic turnouts, they include striping to delineate parking and the edge is marked by a stone curb with concrete sidewalk. As a result, they are non-contributing features. Additionally, 12 turnouts have been added to the road since 1940 and their shape does not follow the configuration of the historic turnouts. Finally, nine of the modern turnouts are caused by shoulder widening. However, 35 of the turnouts have been preserved and the overall integrity of the turnouts has been retained.

Trailheads

The trails adjacent to the Mather Memorial Parkway range in scope from short hikes, such as the trails around Tipsoo Lake, to longer hikes such as the Crystal Peak trail. 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. The Pacific Crest Trail crosses the Mather Memorial Parkway via the Chinook Pass Entrance Arch. This unique structure enables horses and hikers to safely cross the road. Despite minor alterations to trailheads, often caused by modifications to their associated turnouts, they retain integrity.

Sidewalks

Historically, there were two sidewalks associated with the Mather Memorial Parkway. The longest sidewalk ran parallel to the scenic turnout at the Tipsoo Lake overlook. This turnout was altered in 1998 and the old sidewalk was replaced. The new concrete sidewalk extends 1000 feet, matching the length of new turnout. This sidewalk is not compatible with the historic sidewalk and does not contribute to the significance of the Mather Memorial Parkway. The other historic sidewalk was located on the east side of the old Deadwood Creek Bridge. The replacement bridge did not include a sidewalk. Consequently, a scenic viewpoint from the bridge towards Mount Rainier was rendered inaccessible to pedestrians.

Curbs

The only curbs on the Mather Memorial Parkway are associated with the modern sidewalks at Tipsoo Lake and between the replacement guardwall in the switchback segment of road above Cayuse Pass. The Park added the stone curbs in the 1990s to direct drainage from the road bed and to delineate the edge of the paved surface. The curbs are noncontributing features.

See the circulation features chart, which includes their locations, in “Supplemental Information” in the Appendix.

List of contributing features:

Turnouts (35)
Wye intersections (2)
Trailheads (3)

List of non-contributing features:

Turnouts (12)
Trailhead (1)
Sidewalk (1)
Curb (1)



Contemporary photo showing a historic turnout near Klickitat Creek that has retained its compact elliptical shape. An enlarged historic turnout is visible in the background, 2004 (MORA).

Topography

For purposes of the CLI, “topography” is a landscape characteristic that refers to the human manipulation of topography that occurred during construction of the Mather Memorial Parkway Beginning at Chinook Pass and ending at the north entrance arch, the Mather Memorial Parkway traverses some of the most rugged terrain found within the park. Shallow soils and precipitous slopes encountered between Chinook Pass and the intersection with the Yakima Park Highway required extensive blasting and excavation of bedrock in order to establish the bench of the road. In this segment, the road clings to the side of the steep valley slopes, with massive rock cuts, stone retaining walls, and fill slopes extending towards the valley floor. Achieving a maximum grade of six percent over the rugged terrain was a major feat of engineering. In the northern segment of the road, construction of the road bench was achieved with minimal cutting and filling and modest rock cuts. 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.

Today, the road continues to follow the same alignment as was laid out in 1932. The manipulation of topography along the Mather Memorial Parkway is evident in its constructed features, which include rock cuts, cut/fill and berms. Recent minor changes to the road alignment and road prism have been detrimental to the historic character and also affect the local topography. Despite these changes, the topographic features contribute to the significance of the Mather Memorial Parkway, and are described in more detail in the following paragraphs. See the topography features chart, which includes their locations, in “Supplemental Information” in the Appendix.

Cut/Fill and Berms

Cuts and fills are an integral part of the geometry of an engineered road, and are found along the entire length of the Mather Memorial Parkway. A typical cross-section of the road features a cut side travel lane, 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 creates 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. 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, often serving as a protective barrier between the road bench and the canyon below. After the berms were constructed, they were planted with native vegetation and were utilized as a naturalistic design element along the road corridor.

The wetlands and rock formations north of the Mather Wye 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 that rock material to be brought into the park from other locations. The fill-through segments helped achieve a maximum grade of six percent through a series of radial curves and tangent sections for safe travel over difficult terrain.

The rock cuts, cuts and fills and berms retain high integrity and contribute to the significance of the Mather Memorial Parkway.

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. Adhering to NPS naturalistic design principles utilized between WWI and WWII, masons worked on these features, ensuring that the road's rock cuts blended with the surrounding landscape. The masons achieved this objective by varying the surface of the rock, utilizing natural fissures to create natural cleavage and removing scars left by drill marks. The geological formations, together with large rock outcroppings and steep slopes, ensured that numerous rock cuts would be required for the construction of the Mather Memorial Parkway. Two major forms of rock cuts are found along the highway, they include the battered type slope set back from the road and the sheer faced vertical cut. Occasionally a vertical rock cut will include an overhanging ledge. The most common type of rock cut is battered. There are 23 battered rock cuts located between Cayuse Pass and the north entrance arch. The majority of the rock cuts between Chinook Pass and the Cayuse Pass are vertical, up to 300 feet in height, with an occasional overhang. For example, a dark-red andesitic rock cut near the uppermost switchback, one-half mile west of Chinook Pass, contrasts with a large grey-green andesite rock cut at the next switchback. Despite the extent of this rock cut, almost a quarter of a mile in length, the feature blends with the surrounding landscape. These rugged rock cuts are sparsely vegetated, matching the higher-elevation terrain around them.

In contrast to the rocks cuts in the upper segment, the rock cuts in the lower segment of the road, between Cayuse Pass and the north entrance arch, are well-vegetated. This segment reflects the goals of the designers to minimize the impacts of rock cuts, blending them with the surrounding old growth forest. In 1933, Assistant Landscape Architect, Russell L. McKeon noted "various raw cuts and open spaces were planted with trees and vine maple between White River Bridge and the park entrance" (MORA archives).

Of the 39 rock cuts identified along the Mather Memorial Parkway, 37 are contributing features. The two noncontributing rock cuts were constructed during a road project in the 1990s. The specifications for these rock cuts do not meet the standards set in the 1930s for naturalistic rock cuts. The 37 historic rock cuts retain a high level of integrity and contribute to the significance of the Mather Memorial Parkway.

Waterfalls

Where rock cuts or retaining walls corresponded with natural water drainage and creeks, the road-builders created waterfalls and sculpted creek beds to exhibit the water in an aesthetically pleasing way and provide points of interest for motorists. At rock cuts, the waterfalls were carved into the rock following naturalistic design principles, resulting in features that reflect the characteristics of natural waterfalls. While the design of each engineered waterfall is unique, certain principles were used to guide construction of the waterfalls. At the top of each waterfall, the water was channeled into a two-inch to eight-inch channel using a cut or gap in the rocks. Often the water was divided into two or three channels, with most of the water directed into the main channel. Generally, the water would cascade over a sheer drop, varying between a few

inches to several feet before splashing onto a ledge and collecting in pools before it is channeled into the next cascade. This pattern of cascade, splash ledge, and pool was often repeated several times in one waterfall, with each cascade offset from the last. The waterfalls ranged in size from a few feet in height to multi-channeled falls that tumble over tall rock cuts. The larger waterfalls were carved into rock cuts, creating a setback that serves to collect debris and rocks before the water enters the inlet of the culvert. In one instance, wood cribbing is used to dissipate the force of the water and collect debris before it enters the culvert. The waterfalls are often associated with turnouts, providing a place for visitors to pause to view them. In addition, where a creek crossed a retaining wall, NPS landscapes architects designed a niche in the wall large enough to accommodate the flow of water, creating a pleasing effect as the water cascades down the large semi-hewn stones into the culvert below.

There are eight contributing waterfalls along the Mather Memorial Parkway. Two waterfalls are associated with large rock cuts. These waterfalls display shelves cut into the rock where the water cascades before collecting in pools. Additionally, three small waterfalls are also associated with rock cuts. These are adjacent to the road and blend into the surrounding hillside. The last three waterfalls flow down the face of a semi-circular niche and are built into the retaining walls along the segment between Chinook Pass and Cayuse Pass. The waterfalls are in good condition and continue to showcase the technical and artistic skill of the designers and craftsmen that built the road. Some of the smaller falls are obscured by vegetation and debris, making them inconspicuous from the road. In addition to the eight contributing waterfalls, there are a number of drainages that are covered by rocks and debris. These may have originally been carved waterfalls, but the debris currently prevents evaluation.

Superelevations

Superelevation is necessary on higher speed curves to counter-act centrifugal force and provide a safe coefficient of friction between tires and the roadway surface. Superelevation refers to the cross slope of the road from the outside edge to the inside edge. BPR road engineers included superelevations along the Mather Memorial Parkway, which was calculated at a maximum rate of 0.08 percent per foot. The superelevations contribute to the significance of the Mather Memorial Parkway.

List of contributing features:

Rock Cuts (37)

Engineered Waterfalls (8)

List of non-contributing features:

Rock Cuts (2)

Berm (1)



Contemporary photo showing a historic rock cut along the second switchback below Chinook Pass, 2004 (MORA).

Land Use

Historic land use patterns associated with the road design are still evident and effective today. The Mather Memorial Parkway was conceived primarily as a scenic park highway, but also functioned as a destination for visitors and a principle route through the park connected to a larger regional road system. 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.”

Due to the abundance of outstanding natural features that can be viewed when traveling the route, the Mather Memorial Parkway can be classified as a scenic highway where driving is referred to as a leisure activity. The intended use as a scenic park highway is evident in the geometry of the road, which choreographs an intimate experience of park scenery. The rustic and naturalistic features of the road also add to the scenic qualities of the visitor experience. Also intended as a destination for visitors, the road was designed with turnouts to provide visitors access to many scenic and popular destinations such as Tipsoo Lake, Crystal Peak Trail, Mather Overlook, White River and a number of backcountry trailheads.

Finally, the road’s function as a part of a regional transportation system was conceived as secondary to visitor use, although as part of the state highway system, the road is integral to a regional circulation system. As a seasonal state highway (SR 410), the Mather Memorial Highway connects Tacoma with Yakima and areas north of the park, generally between May and November. The lesser importance placed upon regional transportation as a use, is evident in the slower design speed, narrow, curvilinear alignment and the indirect route.

Buildings and Structures

The Mather Memorial Parkway has no associated historic buildings; however, there are numerous historic structures situated along the road. The structures associated with the Mather Memorial Parkway, such as the Chinook Pass Entrance Arch, guardwalls, and retaining walls are unifying elements that add to the historic character of the road. With the BPR 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 also blended skillfully into the surrounding landscape.

The use of a rustic style of architecture allowed many structures along the Mather Memorial Parkway to blend 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 retaining walls 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 vegetation. According to Albert H. Good in *Park and Recreation Structures*, the rustic style can be described as “the use of native materials in proper scale, and through the avoidance of severely straight lines and over sophistication, give the feeling of having been executed by pioneer craftsmen with limited hand tools. It thus achieves sympathy with natural surroundings and with the past.”

The efforts to achieve variety led to great care taken in the specifications and design of stone guardwalls, retaining walls and the stone facing on structures and included specifications for the use of stone with a weathered appearance and a color matching natural rock outcroppings. 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 Mather Memorial Parkway seen in the Chinook Pass Entrance Arch, guardwalls, and retaining walls.

In the last 30 years, there have been alterations to structures associated with the road, including the replacement of Type 4 stone guardwalls below Chinook Pass, the addition of stone pilaster and wood guardrail at the Mather Overlook and the construction of a wood arch at the north entrance. These alterations, although they are non-contributing features, are compatible with the style of rustic architecture practiced by NPS landscape architects in the 1920s and 1930s. Alterations to the structures along road that are incompatible with the rustic style include, the replacement bridge at Deadwood Creek, the addition of COR-TEN® W steel guardrail above Cayuse Pass, log delineators north of the Mather Wye, a section of Jersey barrier near Deadwood Creek Bridge as well as the concrete paving and extended turnouts around Tipsoo Lake. These additions are non-contributing and incompatible with the historic character of the road. The structures along the road are described in greater detail in the following paragraphs.

Chinook Pass Entrance Arch

In 1932, the completion of the road to Chinook Pass resulted in a new entrance to the park. Unlike other park entrances, this rustic log and masonry structure serves as an entrance portal and as a trail bridge carrying the Pacific Crest National Scenic Trail over the road. The entrance arch is 90 feet long and the deck rests on two 50-foot cedar stringers that taper from 32-inches in diameter to 24-inches at each end. Two more logs, 30-inches in diameter, serve as guardrails. The stone abutments are masonry, consisting of irregular native stones. The abutments have a 1:12 batter and the stones decrease in size towards the top. There is a 14-foot clearance between the crown of the road and the underside of the arch.

Flagstones mark the trails approach to the arch, which was decked with roughly hewn cedar puncheons. As the arch neared completion in 1936, park landscape architect, J. Haslett Bell, made a stencil sign which read "Mount Rainier National Park" that was carved into the lower log stringer. In the 1980s, the original cedar puncheon bed was replaced with treated lumber for increased durability. In addition, the historic sign was covered with a painted sign at an unknown date. The Chinook Pass Entrance Arch contributes to significance of the Mather Memorial Parkway. The structure is listed in the National Register of Historic places as part of the multiple resources listing for the historic resources of Mount Rainer and is included as a contributing feature in the NHLD nomination.

Guardwalls and Retaining Walls

There are eight stone guardwalls with associated retaining walls and two stone guardwalls without associated retaining walls along the Mather Memorial Parkway, two contributing and eight non-contributing, but compatible. In addition, there are five retaining walls that were built before the road opened in 1932 that contribute to the cultural landscape and one non-historic retaining wall.

Because guardwalls are associated with rugged topography or drainages, the majority of these features are found in two areas of the highway. There are six guardwalls with retaining walls and two guardwalls without retaining walls located between Chinook Pass and Cayuse Pass. Two additional guardwalls with retaining walls are located along the northern segment of the route where it closely parallels the White River. The guardwalls in the northern segment are classified as masonry Type 1 guardwalls, which were standardized by the NPS Division of Landscape Architecture in the 1920s. The native stones at the bottom of the wall are larger than those at the top and the hewn stone has a tooled surface that gives a rough-cut finish to the wall. These guardwalls contribute to the cultural landscape. The other eight guardwalls are replacement structures for the Type 4 crenellated stone guardwalls that were designed by the NPS Division of Landscape Architecture in the 1930s.

The length of the historic guardwalls varied, but other measurements remained constant. The standard height of the merlons is 24-inches and the embrasures are 18-inches. Each embrasure is 10 feet long and the merlons are two feet long. The width of the guardwalls averages 18-inches and the ends are occasionally flared to blend the structure with the surrounding landscape. The design of the replacement concrete core walls with a stone veneer generally matched the historic features. The new features can be distinguished through the taller height of the merlons at 27-inches, rather than 24-inches and the use of stone veneer with smaller stones than the original

masonry in the guardwalls and retaining walls. However, attention was paid to retaining the particularly small size of the original crenellations of the Type 4 wall in the new walls, and their distinct back projections from the main body of the wall. The replacement Type 4 guardwalls were constructed between 1998 and 2003 as part of a 4R road project involving the NPS and FHWA. The replacement guardwalls and retaining walls are often built on top of old retaining wall sections. Additionally, the modern guardwalls are constructed with a series of breaks to prevent monotony that is compatible with the historic character of the original walls. Alternating berms, isolated rock barriers, and rubble is used in the open sections between the walls. The replacement guardwalls between Cayuse and Chinook Pass are non-contributing features; however, the form and location of the guardwalls is compatible with the historic character of the Type 4 guardwall they replaced.

The five historic and one non-historic retaining walls are located on the cut side of the road between Chinook Pass and Cayuse Pass. The stones used in the historic structures range from unhewn, semi-hewn to hewn. They range in size from 1 x 2 feet to 4 x 3 feet, 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 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. The retaining walls were also constructed with semi-circular niches that directed the flow of creeks into the drainage ditch below.

Non-contributing Structures

North Entrance Arch

In 1977, the NPS constructed the north entrance arch at the northeast boundary of the park. This structure was the last entrance arch to be built and was constructed with peeled cedar logs to create a large portal. In keeping with other contemporary entrance arches in the park, it was modeled after the historic Nisqually Entrance Arch. The north entrance arch is a noncontributing feature, but is compatible with other historic entrance arches found within the park.

Deadwood Creek Bridge

Constructed in 1995, the spandrel concrete arch bridge is the only structure of its kind in the park. The bridge replaced an earlier structure built in 1938. The concrete bridge is faced with simulated stone masonry. The simulated stone is cast-in-place concrete, uniform in color, and has a repeating pattern every six feet. The 1938 bridge was also a concrete spandrel bridge. This bridge was constructed with cast-in-place concrete, but did not include the typical rustic style stone masonry facing. Instead, the bridge had exposed concrete guardwalls with concrete sidewalks and curbs. The Deadwood Creek Bridge is a noncontributing feature, but is compatible with the historic structure that it replaced.

Stone Pilaster and Wood Rail Fence

There are two stone pilaster and wood rail fences on the Mather Memorial Parkway. The first is located at the Mather Memorial Overlook, while the second is at the Tipsoo Lake Developed Area. The pilaster and log railing was designed and built during the Mission 66 era. Their design consists of stone veneered concrete posts 18-inches square and 24-inches high, spaced

eight feet on center with a single six inch-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 follow some of the NPS rustic guidelines which were specified by the Landscape Architecture Division of the NPS in the 1930s. However, the historic design called for more irregular spacing, large to medium stones, and the use of unmilled wood. The modern stone pilasters are highly regular, using small cut stones with straight edges and tight, crisp vertices and corners.

Today, only the Mather Memorial Overlook structure has been retained, the stone pilaster and wood rail fence at Tipsoo Lake was replaced in 1998 as part of a 4R road project. The replacement structure retained the pilaster and rail design, but the pilasters were built nearly three feet taller than their predecessors. The stone pilaster and wood rail fences are not compatible with the rustic guidelines and are non-contributing features.

Log Railing

Log rails with precast concrete pier blocks were laid during Mission 66 as outside edge delineators. They are located along exposed segments of the road between Cayuse Pass and the Mather Wye. The log rails are noncontributing features.

COR-TEN® Steel W Railing

COR-TEN® Steel W Railing was installed during the Mission 66 era. The barriers are located above Cayuse Pass and along a small segment of road near Deadwood Creek Bridge. The COR-TEN® steel W Railings are noncontributing features.

Jersey Barrier

The Washington State Highways Department replaced a segment of damaged log railing south of the Mather Memorial Overlook with concrete Jersey barrier. The structure is a noncontributing feature.

See the circulation features chart, which includes their locations, in “Supplemental Information” in the Appendix.

List of contributing features:

Chinook Pass Entrance Arch
Guardwalls w/ retaining walls (2)
Retaining Walls (5)

List of non-contributing features:

Deadwood Creek Bridge
North Entrance Arch
Guardwalls w/ retaining walls (6)
Guardwalls w/out retaining walls (2)
Retaining wall (1)
Stone Pilaster and Wood Railing Fences (2)
Log Railings (3)

COR-TEN® Steel W Railings (3)
Jersey Barrier (1)



Contemporary photo showing the contributing Chinook Pass Entrance Arch from outside the park, 2004 (MORA).



Contemporary photo showing a Type4 guardwall reconstruction between Cayuse Pass and Chinook Pass, 2004 (MORA). This wall is non-contributing, but compatible.



Contemporary photo showing the non-contributing replacement Deadwood Creek Bridge with simulated stone guardwalls, built in 1995. (MORA, 2004).

Small Scale Features

Small scale features associated with the Mather Memorial Parkway collectively contribute to the function and aesthetic of the road. Significant small scale features, located along the Highway include culverts with headwalls as well as directional signage. These features 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 native materials were used when possible. Many of the small scale features were designed in the NPS rustic style, which included the use of native materials and organic forms that blend with the surrounding environs.

Today, the road retains many of the culverts that were designed and built as part of the original road construction. 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 with metal or fiberglass signs. With the exception of modern signs, the majority of the features retain a high degree of integrity and contribute to the significance of Mather Memorial Parkway. The range of historic small scale features along the road is described in more detail in the following paragraphs.

Stone Marker at Yakima Highway Intersection

The stone directional marker, designed by the NPS Division of Landscape Architecture in 1940, is located at the intersection with the Yakima Park Highway. The marker features hewn stones, routed wood road name signs and two metal engraved panels indicating the direction to “Seattle” and “Yakima.” The installation of the marker was timed to coincide with the official completion of the Eastside Highway in June 1940, connecting the Mather Memorial Parkway at Cayuse Pass with the southern entrance to the park at Ohanapecosh. The original lettering on the directional sign read “Mount Rainier National Park” with smaller letters underneath that read “Yakima Park.” The historic sign was later replaced at an unknown date. Although the original stone marker has been resigned, the stone base retains integrity and the Stone Marker at Yakima Highway Intersection contributes to the significance of the Mather Memorial Parkway. The structure is listed in the National Register of Historic Places as part of the multiple resources listing for the historic resources of Mount Rainier and is included as a contributing feature in the NHLD nomination.

Culverts

The alignment of the Mather Memorial Parkway in relation to the surrounding natural topography and hydrology necessitated extensive use of culverts to facilitate drainage of rainwater and small streams. Along the road corridor, runoff from uphill slopes was collected in an open ditch on the cut side of the road. Running down-hill, the ditch would zigzag into a series of small falls to collect debris carried by the water, which often included rocks and tree limbs. This water was then collected in an open catch basin and conveyed across the road through culverts placed at regular intervals. At points where the road crossed drainage gullies and perennial streams, the roadbed was through-filled above grade and fitted with large reinforced concrete pipes or box culverts in order to avoid the expense of bridge building and potential for

flood damage. The same principles of rustic design and use of native materials that guided the construction of the rustic structures on the Mather Memorial Parkway also informed the location and design of the culverts and their headwalls. Both the inlets and the outlets of the culverts were concealed from view from the roadway with topography and vegetation. Culvert headwalls were constructed of mortared native stones of varying sizes and shapes, which would ensure that they would blend with the landscape. Many of the historic culverts constructed along the Mather Memorial Parkway are extant and retain a high degree of integrity.

Culverts along the road can be divided into two major categories: smaller pipe culverts that convey surface runoff from the ditch across the road, and larger box culverts that accommodate perennial and intermittent streams and drainage gullies. Of the smaller culverts, well over 100 still manage drainage across the road. These are typically 12-inch to 18-inch concrete or corrugated steel pipes with mortared stone headwalls at the inlet. Typically, these culverts measured two to five feet high and 6 to 12 feet wide. The stonework does not express the same degree of craftsmanship as that of guardwalls; however, they still serve as a good representation of rustic design principles. Laid in regular courses, the stones are hewn into irregular shapes and tooled to give a rough-cut face. Mortar joints are a half inch to one inch wide and are either flush with the face of the stone or beveled. The outlets of the smaller culverts typically do not have headwalls, but are instead imbedded in riprap and concealed with vegetation. In some cases, the outlets are entirely concealed beneath large stones in the riprap fill slope. Today the majority of the culverts are in fair to good condition. Of those culverts that are in poor condition, the majority include headwalls that are covered with moss, fallen trees and woody debris. Some damage is apparent to the headwalls themselves, with stones and mortar pieces loose or missing. Often the catch basin in front of the inlet is silted up or filled with rocks and debris.

Several larger culverts along the highway convey streams and seasonal drainage across the road. Designed to accommodate seasonally large volumes of water, these are box culverts with substantial stone headwalls at the inlet and occasionally at the outlet. The culverts sometimes include angled wing walls and concrete or rock lined channels to direct the water into the culvert. These headwalls display a level of craftsmanship and design approaching that of the larger structures like the guardwalls and bridges. The culvert at Chinook Creek (MP 02.316) is a concrete box culvert with stone headwalls at both ends and angled wing walls. The culvert opening is six feet high and seven feet wide. The mortared stone headwalls are approximately 10 feet high and 20 feet wide, including the large angled wing walls. While the concrete culvert ceiling is flat, the stone openings are arched with arch ring stones above.

As part of a road project in the 1990s between Chinook Pass and Cayuse Pass, many of the historic culverts were replaced with drop inlets. A total of 13 drop inlets were built and they are noncontributing features. Additionally some historic headwalls were replaced with incompatible rip-rap walls. Despite the aforementioned change, 76 out of 95 existing culverts and drainages are historic and still convey their rustic design character.

Signs

During the historic period, signs were used sparingly, and consisted of small, treated wood plaques with routed and painted lettering. The wood signs were eventually replaced with steel

and fiberglass interpretive signs at major points of interest. Trailhead signs are small, engraved steel plates, bolted to steel posts about three feet in height. Other signs include mile markers and standard reflective highway signs warning of reverse curves and radial turns. Non-contributing signs include interpretative signs at Tipsoo Lake and the Mather Memorial Overlook, trail signs at Tipsoo Lake and Crystal Creek, WSDOT signs, and park circulation signs.

See the small scale features chart, which includes their locations, in “Supplemental Information” in the Appendix.

List of contributing features:

- Stone Marker at Yakima Highway Intersection
- 18”-24” Culverts w/ mortared headwalls (51)
- 18”-24” Culverts w/ drylaid rubble headwalls (17)
- 24” Double Culverts (2)
- 36”-48” Culverts (5)
- Chinook Creek Box Culvert (1)

List of non-contributing features:

- 24” Culverts, corrugated steel (8)
- Box Culvert (1)
- Drop Inlets (13)
- Gravel Berm (1)



Contemporary photo showing the contributing Stone Marker at Yakima Highway Intersection, 2004 (MORA).



Contemporary photo showing a historic culvert between upper and lower Tipsoo Lakes, 2004 (MORA).

Views and Vistas

The extraordinary views enjoyed by visitors to the Mather Memorial Parkway were created by NPS landscape architects in the 1930s through their thoughtful design of the road. Along the length of the road, the visitor is exposed to spectacular scenery, including peaks, ridges, valleys and rivers. In addition, visitors have the opportunity to view exquisite built features, which include entrance arches, guardwalls and rock cuts. According to Ricksecker, 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” (MORA archives). Three types of views predominate along the road: framed views, panoramic views and vistas. The framed views are often achieved through manipulation of vegetation, such as the view from Deadwood Creek Bridge. Some of the framed views are located at a discrete vantage point and are often adjacent to a turnout. The panoramic views are often located along exposed segments of fill slopes, such as the sweeping panoramas on the descent to Cayuse Pass. Important vistas are revealed at key points along the route, such as at the top of a crest curve or when an enclosed segment of a canopy covered road abruptly ends and a distant peak is revealed.

In designing the road, NPS landscape architects made effective use of the topography to maximize views. As the road traverses the massive rock cuts and long sections of stone guardwall, travelers are treated to broad panoramic views of the surrounding terrain. Between Chinook Pass and Cayuse Pass, the road is at a high elevation providing views of Mount Rainier and the Chinook Creek drainage. After Cayuse Pass there are views across the valleys. The major view is up the White River valley towards Mount Rainier. The only interpreted view is located at the Mather Memorial Overlook. This small developed area includes a turnout and a wayside interpreting the volcanic history of Mount Rainier. After the Mather Wye, the road enters dense forest, descending to the floor of the White River valley, which limits the extent of views in this segment. Where views exist they are short and filtered, generally providing glimpses down the gentle fill slope to the White River. These views are typically inconspicuous from the roadway and are often missed at driving speed. Turnouts, however, provide opportunities for visitors to stop and enjoy views of the river.

View points were also designed to showcase the rustic architecture of the structures along the road. Turnouts were located at the ends of bridges, rock cuts, guardwalls and entrance arches. During road construction, Davidson noted that care was taken not to destroy views of interesting rock formations by blasting rock from the hillside, thereby creating “drab talus slopes” (MORA archives). Turnouts above Cayuse Pass expose visitors to the dramatic views of the impressive road engineering above, including high retaining walls and massive rock cuts. A large turnout at the north end of the guardwall, above the second switchback, affords a view of the road below and the Chinook Creek drainage. In four instances, turnouts offer close-up views of waterfalls that were shaped and enhanced during construction of the road in conjunction with rock cuts.

The views along the Mather Memorial Parkway are an integral aspect in defining the character and experience of the highway. Most of the historic views along the upper segment of the road have been retained due to steep fill slopes and high elevation. In some places, the views have been obscured or are threatened by fast-growing vegetation, such as Red alder. This is especially

true in the lower segment of the road where growth rates are higher. Despite the inevitable minor changes due to growth of vegetation, the integrity of these views is intact. The views contribute to the significance of the Mather Memorial Parkway.

See the views and vistas features chart, which includes their locations, in “Supplemental Information” in the Appendix.

List of contributing features:

Viewpoints (18)



Contemporary photo showing how the alignment of the road directed views towards Yakima Peak, 2004 (MORA).



Contemporary photo showing view of Mount Rainier from the Mather Overlook, 2004 (MORA).

Vegetation

The Mather Memorial Parkway travels through a diverse range of forest associations from Chinook Pass down to the White River valley. The collective effects of elevation, slope, topography and aspect all contribute to the overall pattern of vegetation as the road travels through subalpine, montane and lowland forest. A mix of true fir species and Mountain hemlock characterizes the subalpine zone, while tree species in the montane zone include Douglas fir, Western hemlock, Western red cedar, Red alder, and Cottonwood. Western hemlock is the dominant species in the lowland forest, which also includes Red alder along the disturbed areas of the road embankment.

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. While the road was under construction, NPS design specifications called for the preservation of specimen trees. Many of these trees are still present today exhibiting a large diameter, between 18-inches and 40-inches. 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 roads historic character, retaining a high degree of integrity. The characteristic vegetation types are described in greater detail in the following paragraphs.

Subalpine Forest and Subalpine Meadow Segment:

The Mather Memorial Parkway encounters the subalpine forest near Chinook Pass. Soils are generally moist to wet, with a heavy snow pack, sometimes lasting into the summer. Dominant trees include subalpine fir, Mountain hemlock, Silver fir and Alaska yellow cedar. The dominant understory species include Cascade azalea and several species of huckleberry. At Tipsoo Lake, the road passes through a subalpine meadow. The meadow is characterized by low-growing, predominantly herbaceous vegetation, with scattered clusters of Mountain hemlock and subalpine fir.

Montane Forest Segment:

The Mather Memorial Parkway encounters montane forest at Cayuse Pass (4,687 feet) until the lower reaches of Crystal Creek. The climax species of the montane forest is Silver fir, with a strong association of Alaska yellow cedar, Noble fir, and Western hemlock. Variations in microclimate allow other plant communities to exist. For example, areas along Deadwood Creek and Klickikat Creek are populated by Red alder and the occasional Cottonwood, which are located on exposed portions of the fill slope, usually close to a culvert outlet.

Lowland Forest

Western hemlock is the dominant species in the lowland forest, which extends along the floor of the White River valley. Strong associations include Douglas fir and Western red cedar. Old-growth trees are found throughout this area, including specimens that are up to 800 years old. In moist areas along the road, especially near springs, a well-developed shrub layer of Vine maple and Devil's club dominates, with a variety of herbaceous plants filling out the river washes and gravel bars. Throughout this forest, the understory is less diverse, with sword fern serving as a dominant species.

Specimen Trees

Designers of the Mather Memorial Parkway gave careful consideration to the vegetation when determining the alignment of the road, cut and fill, the design and treatment of structures, and post-construction rehabilitation. During construction, minimal clearing and earth-moving ensured preservation of the forest character. Special effort was made to preserve vegetation close to the road. Specimen trees and small groups of trees were retained, sometimes inches from the travel lanes. Often these trees were retained for aesthetics, slope stabilization, and for bearings during construction. These trees, typically located on the shoulder of the road or on the fill bank of major rock cuts, were generally surveyed ahead of time and noted on the site plans. Where the grade needed to be raised around a tree, tree-wells were constructed using stones to retain the fill material. After construction, disturbed areas such as fill slopes and rock cuts were revegetated by the Civilian Conservation Corps (CCC) to stabilize the slopes and restore the naturalistic effect. Special attention was given to the Tipsoo Lake area. In 1934, Halsey M. Davidson, Landscape Architect, noted:

“The largest project in this area was the obliteration of the old road which circled the lower lake, and its replacement with a foot trail . . . Sods were planted to cover the old road. They were obtained from hidden locations, many being hauled three miles, and were planted as close together as possible leaving only room for soil to be packed between them. Two groups of trees were planted (54 in all) to cover scars left several years ago by a road construction camp. An attempt was made to conceal the new Cascade Summit trail where it is visible from the Tipsoo lake area by planting heather and sods on the bank and on the fill below the trail” (MORA archives).

Descending from Chinook Pass, the higher elevation and steeper slopes support a more open forest. In this segment, groupings of subalpine fir, retained during construction of the parkway, are located on the exposed fill slopes. In contrast, old-growth forest envelops the northern segment of the road in a deep green canopy. In this segment, large specimen trees retained during construction of the road are located on the shoulder and fill slope. Many of the historic rock cuts are covered by vegetation such as Western hemlock and Vine maple, which have gained a toe-hold in the engineered ledges. Structures such as the Deadwood Creek Bridge and guardwalls are partially covered or anchored by trees and shrubs, serving to blend the structures into the surrounding landscape. In 1933, Assistant Landscape Architect, Russell L. McKeon noted the work completed at Deadwood Creek Bridge: “Bridge ends were improved in Deadwood Creek by the transplanting of shrubs and trees at opportune locations. Planting here was confined to spots on bridge approaches, cut slopes in the immediate vicinity and a few shrubs in the river bed to relieve monotonous expenses of masonry” (MORA archives).

Today, vegetation continues to contribute to the historic character of the road. The large-scale patterns of vegetation and the evolution of the forest character as the road descends to the White River valley are intact. Many of the specimen trees along the roadside and on the fill slopes remain, as do the patterns of vegetation on the rock cuts, fill slopes, road shoulders, and around structures. In numerous places, the road corridor has been widened leading to the removal of specimen trees from the shoulder. Despite the widening of the shoulder, the overall historic

character of the vegetation has been retained. Vegetation, including specimen trees, contributes to the significance of the Mather Memorial Parkway.

See the vegetation features chart, which includes locations of specimen trees and contributing tree groupings, in “Supplemental Information” in the Appendix.

List of contributing features:

Specimen Trees (7)

Tree Groupings (17)



Contemporary photo showing a historic tree grouping along the first switch back below Chinook Pass, 2004 (MORA).

Archeological Sites

A total of 10 documented archaeological sites exist within the road corridor. Six of the sites are described in detail, while the information associated with the remaining four new sites is not yet available. Based on their close association with the historic development of the road, these archeological sites contribute to the significance of the Mather Memorial Parkway.

Chinook Pass Trail (FS 1996-11a)

The importance of an east-west connection associated with the Cascades and Mount Rainier has been understood for thousands of years. Prehistoric evidence reveals that a route at Chinook Pass linked Mount Rainier at Sunrise Ridge to the American River drainage and Yakama territory in the east. A 1915 park map (Mount Rainier National Park Map, edition of May 1915, reprinted 1923) shows the probable alignment of this historic trail up the American River drainage, over Chinook Pass, north of Tipsoo Lakes, west to Cayuse Pass and northwest down the Klickitat Creek drainage towards Sunrise Ridge. The Chinook Pass Trail (FS 1996-11) is likely a late mid-Holocene cultural feature that has been utilized for nearly 4,000 years as a source for foot travel and later for horse travel (Burtchard 1998:118-119). The route probably also served as a transportation link across the Cascades to hunting and foraging grounds in the open subalpine parks of Mount Rainier. The importance of this route is revealed by the seasonal long-term use base and hunting sites adjacent to the travel route, including at Tipsoo Lake (FS 88-01, FS 95-01) and Deadwood Lake (IF 01-75, IF 01-95). By 1917, the Yakama people stopping using the trail, due to park hunting regulations. (“Natives Americans folder,” Longmire library, no date: 9). Today, physical traces of the Chinook Pass Trail can be seen from the Mather Memorial Parkway in the vicinity of Chinook Pass and Tipsoo Lake.

Highway 410 Historic Grade (FS 1996-11b)

Recent archeological findings reveal that an unengineered roadbed was aligned over portions of the Chinook Pass Trail between Tipsoo Lake and Ghost Lake. This single-width historic grade is approximately 12 feet wide and achieves grades up to 15 percent. The dirt road is becoming revegetated, but is traceable for approximately one-half of a mile, intercepting the Mather Memorial Parkway at either end. The road was most likely built between 1928 and 1932 during construction of the final 8-mile segment of the Mather Memorial Parkway (at that time called the Naches Pass Highway) to access borrow pits to obtain rock for the construction of the new road.

Highway 410 Historic Maintenance Area (FS 2001-01)

An archeological site containing artifacts identified as early road building materials is located on both sides of the road near the Crystal Creek turnout and trailhead, along the Mather Memorial Parkway. On the east side of the road, approximately 120 feet south of the trailhead, a narrow service road or trail (approximately 10 feet wide) leads from the road across an excavated channel to an area where artifacts can be found in several piles. Artifacts include wood stave pipes, clay pipes, corrugated metal, and milled lumber. The service road continues east past this area and leads to a small bunker, approximately 1.5 x 2 x 2-feet in size, constructed with large hand-hewn lumber, a corrugated metal roof, and over-scaled iron bolts and hinges. At the end of the service road is another larger bunker, approximately 4 x 6 x 7-feet in size, constructed in a similar manner. A sign on the door of the larger structure reads “Danger Explosives” and thus

both bunkers are believed to have served as explosives caches. It is possible that the smaller structure was used to store explosive charges. On the west side of the road, a small structure is located near the former WSDOT maintenance facility. The structure measures approximately 10 x 15 feet and has a gabled roof. Constructed from large-scale milled lumber and over-scaled iron bolts the structure appears to be associated with the maintenance stockpile area. In the 1930s, a CCC spike camp existed at Crystal Creek (Mills 1976: no page). While the Crystal Creek Trail was constructed by this crew, it is possible that they participated in maintenance activities that were operated from this maintenance area or that the camp itself was located here.

White River Entrance Road (FS 2003-09)

This site was only partially recorded by the park archaeologist at the time of writing. The White River Entrance Road was built between 1914 and 1916 by the Mount Rainier Mining Company. The road's alignment was likely preceded by a trail that was developed by the mine claimant, Peter Storbo, from 1906 to 1909 ("Mining—Mount Rainier National Park folder" in Longmire Library, no date: 126). The road functioned as a service road to the Storbo mine claim in Glacier Basin and was also known as the Storbo Road. Originally, the 28-mile road ran from Greenwater up the north bank of the White River to the Storbo mine (Ripp "Mount Rainier Mining Co." 1999 article). This established the first vehicular route to the northeast part of the park and was a predecessor to the McClellan Pass Highway that soon followed its alignment. The length of the road within park boundaries was approximately 10 to 12 miles, starting from the ranger station at park boundary No. 62 to the mine claim at Glacier Basin (Mills 1976: no page). It was described as a one-lane gravel road, 12 to 14 feet wide, with grades from 2.5 percent to 13.5 percent (General Information Publication 1919: no date, www.nps.gov/mora/RDPPayne2/gi1919l.htm retrieved on 9/10/03). The National Park Service, established in 1916, took over maintenance of the "lower three miles of the road" in the park (HAER No. WA-125:2).

The old White River Road roadbed is significant as a predecessor to the McClellan Pass Highway, which generally followed its alignment. The road was not built as a scenic drive, which is evident in its straight alignment along the river terrace. The road crossed the White River to the early White River Ranger Station at park boundary No. 62. This location is approximately 2.8 miles south of the north park boundary (and 1.6 miles north of the Mather Wye). By the late teens and early 1920s, visitors began accessing the park over the new state road that linked with the park's newly-acquired White River Entrance Road (HAER No. WA-125: 2; Mills 1976: no date). While the McClellan Pass Highway was aligned over and therefore obliterated parts of the old White River Entrance Road, some parts of the earlier road still remain today as a distinct roadbed. The extant segments include an 18-foot wide roadbed with rock cuts and drylaid stone retaining walls on the fill side of the road. The drainage ditch is discernable on the cut slope and wood culverts are also evident. The early road pavement, consisting of oil gravel can be found underneath inundating layers of duff and reforesting trees. The remaining road bed runs approximately one-half mile in length, between 2.2 to 2.8 miles south of the new north park entrance.

Tipsoo Lake Comfort Station Foundation (FS 2002-05)

Approximately one-half mile south of the Chinook Pass Entrance Arch and directly across from the Tipsoo Lake scenic overlook, a 60-foot long social trail leads to the remains of a comfort station dating from the period of significance. In the 1930s and 1940s, hiking and picnicking in the summer and skiing in the winter were popular at Tipsoo Lake, requiring sanitary facilities to accommodate year-round use. The comfort station, constructed by the CCC in 1934, was situated on a mid-slope bench south of Tipsoo Lake. The remains reveal an exposed portion of the structural stone masonry foundation that suggests that the structure was approximately 15.5 feet wide and 20 feet long. A drainage hole appears to be embedded in the foundation, directing water to a well-defined drainage that continues for nearly 100 feet in length.

Prehistoric Culturally Modified Cedar (FS2004-10)

The native peoples would seasonally harvest bark from Western red cedars. The bark peels were long, extending up to 30 feet in length, and were used for basketry and clothing. Contemporary peeled cedars are occasionally found within the park and high concentrations of historic to protohistoric peeled cedars are found in the adjacent Gifford Pinchot Forest associated primarily with huckleberry harvesting (Diaz, 2004).

Management Information

Descriptive and Geographic Information

Historic Name:	Mather Memorial Parkway Highway 410 State Road No. 5 Naches Pass Highway McClellan Pass Highway
Current Name:	State Route 410 Highway 410
Management Unit:	NA
Tract Numbers:	NA
State and County:	Pierce County, WA
Size (acres):	281

Boundary UTM's

Source	Type	Datum	Zone	Easting	Northing
GPS-Differentially Corrected	Line	NAD 83	10	613110	5192006
GPS-Differentially Corrected	Line	NAD 83	10	612969	5191450
GPS-Differentially Corrected	Line	NAD 83	10	612084	5191893
GPS-Differentially Corrected	Line	NAD 83	10	611504	5191566
GPS-Differentially Corrected	Line	NAD 83	10	612079	5191761
GPS-Differentially Corrected	Line	NAD 83	10	612581	5191210
GPS-Differentially Corrected	Line	NAD 83	10	611957	5191649
GPS-Differentially Corrected	Line	NAD 83	10	611201	5192283
GPS-Differentially Corrected	Line	NAD 83	10	611703	5200423
GPS-Differentially Corrected	Line	NAD 83	10	611327	5203778

GIS File Name: CLI_GIS_ESH

GIS File Description: The GIS files contain landscape feature data pertinent to the Cultural Landscape Inventory for the Mather Memorial Parkway. 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 park's southeast entrance, the Chinook Pass Entrance Arch. The end point is located where the road exits the park at the north entrance arch (MP 11.600).

National Register Information

National Register Documentation: Entered – Inadequately Documented

Explanatory Narrative:

The Mather Memorial Parkway and its associated features and surrounding landscape were described in the 1997 National Historic Landmark District nomination. However, the nomination does not adequately document the landscape characteristics and features along the road. This CLI expands the description of the road's setting, providing greater detail and reevaluates the boundary.

National Register Eligibility: Eligible - SHPO Consensus Determination

Explanatory Narrative:

The Mather Memorial Parkway was included in the National Historic Landmark District, which was listed on the National Register in 1997. This CLI was submitted to the Washington SHPO in 2007 for consensus determination on the additional descriptions of contributing features and proposed changes to the boundary.

Date of Eligibility Determination: 9/17/2007

National Register Classification: District

Significance Level: National

Contributing/Individual: Contributing

Significance Criteria:

A -- Inventory Unit is associated with events that have made a significant contribution to the broad patterns of our history

C -- Inventory Unit embodies distinctive characteristics of type/period/method of construction; or represents work of master; or possesses high artistic values; or represents significant/distinguishable entity whose components lack individual distinction

Period of Significance

Time Period: 1926-1934

Historic Context Theme:

Creating Social Institutions and Movements

Historic Context Subtheme:

Recreation

Historic Context Facet:

General Recreation

Historic Context Theme:

Expressing Cultural Values

Historic Context Subtheme:

Landscape Architecture

Historic Context Facet:

Development of Transportation and Land Tenure Systems

Historic Context Theme:

Expressing Cultural Values

Historic Context Subtheme:

Landscape Architecture

Historic Context Facet:

The Automobile Age and Suburban Development

Area of Significance

Category:

Landscape Architecture

Priority:

1

Category:

Engineering

Priority:

2

Category:

Architecture

Priority:

3

National Historic Landmark Information

National Historic Landmark: Yes

Date Determined Landmark: 2/18/1997

Landmark Theme: National Park Service landscape architecture and
National Park Service master planning

World Heritage Site Information

World Heritage Site: No

Cultural Landscape Type and Use

Cultural Landscape Type: Historic Designed Landscape

Current and Historic Use/Function:

Use/Function Category: Transportation
Use/Function: Road-Related
Detailed Use/Function: NPS Class VI Restrictive Road
Type of Use/Function: Both Current and Historic

Use/Function Category: Recreation/Culture
Use/Function: Outdoor Recreation
Detailed Use/Function: Outdoor Recreation-Other
Type of Use/Function: Both Current and Historic

Ethnographic Information

Ethnographic Survey Conducted: Yes – Restricted Information

Significance Description:

Documented in "Ethnographic Guide to the Archeology of Mount Rainier National Park" by Allan H. Smith, 1964 and "Review and Assessment of the Ethnographic Literature of Mount Rainier National Park, Volumes 1 and 2" by Astrida R. Blukis Onat, 1999.

Adjacent Lands Information

Do Adjacent Lands Contribute: Yes

Adjacent lands Description:

Mather Memorial Parkway, or State Route 410, is a state road linking Yakima to Enumclaw. Only 11.535 miles of the road are within the national park. Lands outside the park are visible to motorists when driving along the part of the parkway that is within the national park. The appearance of adjacent lands within the viewshed of the Mather Memorial Parkway has the capacity to alter travelers' experience.

General Management Information

Management Category: Must Be Preserved and Maintained

Management Category Date: 2/18/1997

Explanatory Narrative:

The management category for the Mather Memorial Parkway is “A – Must be Preserved and Maintained” because it meets the following criterion: the inventory unit is nationally significant as defined by National Historic Landmark criteria. The Mather Memorial Parkway was determined to be a contributing structure within a National Historic Landmark District in February, 1997. The NHL theme for the district is National Park Service landscape architecture and National Park Service master planning.

Condition Assessment and Impacts

The criteria for determining the condition of landscapes is consistent with the Resource Management Plan Guideline definitions (1994) and is decided with the concurrence of park management. Cultural landscape conditions are defined as follows:

Good: indicates the landscape shows no clear evidence of major negative disturbance and deterioration by natural and/or human forces. The landscape’s cultural and natural values are as well preserved as can be expected under the given environmental conditions. No immediate corrective action is required to maintain its current condition.

Fair: indicates the landscape shows clear evidence of minor disturbances and deterioration by natural and/or human forces, and some degree of corrective action is needed within 3-5 years to prevent further harm to its cultural and/or natural values. If left to continue without the appropriate corrective action, the cumulative effect of the deterioration of many of the character-defining elements will cause the landscape to degrade to a poor condition.

Poor: indicates the landscape shows clear evidence of major disturbance and rapid deterioration by natural and/or human forces. Immediate corrective action is required to protect and preserve the remaining historical and natural values.

Undetermined: not enough information available to make an evaluation.

Condition Assessment: Fair

Assessment Date: 9/30/2004

Date Recorded: 5/10/2007

Park Management Concurrence: 7/27/2007

Stabilization Measures:

Stabilization is deferred pending treatment as outlined in the Federal Highway Administration Rehabilitation Plan (2004).

Impacts:

Type of Impact: Deferred Maintenance
Internal/External: Internal
Description: The deferral of regular, cyclical maintenance activities has had a negative impact on the condition of the road and its associated features. Significantly, the stone features associated with the road (culverts and walls) need their mortar joints re-pointed, and the build-up of debris, lichen, moss needs to be removed. Ditch and culvert cleaning, roadside vegetation clearing. Cyclical maintenance and cleaning will prevent further deterioration in the future.

Type of Impact: Exposure to Elements
Internal/External: Internal
Description: Aggradation of the White River bed, adjacent to the northern three miles of the road has raised the river higher than the road. This is causing repeated inundation of the road by the river. The phenomenon is created by climate change. Ultimately, the vertical alignment of the road will need to be raised.

Type of Impact: Exposure to Elements
Internal/External: Internal
Description: Exposure to elements is a condition that often affects buildings and structures located in natural settings. In the absence of regular maintenance activities, this can quickly lead to deterioration. The stone features, including the walls and culvert headwalls, associated with the Mather Memorial Parkway are negatively impacted by exposure to the elements. Specifically, the mortar on a large number of historic stone features has deteriorated and is in need of re-pointing. This deterioration has resulted in the separation of stones from the rest of the feature.

Type of Impact: Other -- Damage by snow plows
Internal/External: Internal
Description: Damage, occurring seasonally as a result of snow plows, has negatively impacted several masonry guardwalls and structures associated with SR 410. Care should be taken by

plow operators to avoid contact with the guardwalls and associated structures to prevent further damage.

Type of Impact: Structural Deterioration
Internal/External: Internal
Description: The stone walls located along the road are the primary features being impacted by structural deterioration. The mortar in these features is deteriorating and their joints are in need of re-pointing. This impact is particularly important to address in order to prevent further structural deterioration.

Agreements, Legal Interest, and Access

Management Agreement: Interagency Agreement

Expiration Date: NA

Explanatory Narrative:

The Mather Memorial Parkway is a state road which runs through the national park for a small part of its overall length. Management decisions about the road involve the National Park Service, the Federal Highways Administration, and WASDOT.

NPS Legal Interest: Less than Fee Simple

Public Access: Other Restrictions

The road is closed in winter and during periods of unsafe driving conditions.

Treatment

Approved Treatment: Rehabilitation

Approved Treatment Document: Other Document

Document Date: November 1, 2004

Explanatory Narrative:

The treatment document is the Federal Highway Administration Rehabilitation Plan.

Approved Treatment Completed: No.

Approved Treatment Cost

Landscape Approved Treatment Cost:	\$14,000,000
Cost Date:	November 1, 2004
Level of Estimate:	B - Preliminary Plans/HSR-CLR
Cost Estimator:	Other Center
Explanatory Description:	Cost estimator is the Federal Highway Administration.

Stabilization Costs

Landscape Stabilization Costs:	\$0
Cost Date:	NA
Level of Estimate:	NA
Cost Estimator:	NA
Explanatory Description:	

Stabilization is deferred pending treatment.

Appendix

Citations

Citation Author: Alt, D. and D.W. Hyndman
Citation Title: Northwest Exposures: A Geologic Study of the Northwest
Year of Publication: 2003
Publisher: Mountain Press Publishing Company
Citation Type: Both Graphic and Narrative
Citation Location: PWRO-SEA, MORA

Citation Author: Brockman, Frank C.
Citation Title: Flora of Mount Rainier
Year of Publication: 1947
Publisher: Washington D.C.: National Park Service
Source Name: PWRO-SEA
Citation Type: Both Graphic and Narrative
Citation Location: PWRO-SEA, MORA

Citation Author: Burtchard, Greg
Citation Title: Environment, land-use and archaeology of Mount Rainier National Park, Washington
Year of Publication: 1998
Publisher: Honolulu, Hawaii: International Archaeological Research Institute
Citation Type: Narrative
Citation Location: MORA

Citation Author: Carr, Ethan
Citation Title: Wilderness By Design: Landscape Architecture and the National Park Service
Year of Publication: 1998
Publisher: Lincoln, NE: University of Nebraska Press
Source Name: Library Of Congress/Dewey Decimal
Citation Number: SB482.A4C37 1998
Citation Type: Narrative
Citation Location: LOC, WASO, PWRO-SEA

Citation Author: Carr, Ethan, Stephanie Toothman and Susan Begley

Citation Title: Mount Rainier National Park, National
Historic Landmark District Nomination
Year of Publication: 1996 (designated in 1997)
Publisher: National Park Service
Citation Type: Narrative
Citation Location: MORA, PWRO-SEA

Citation Author: Catton, Theodore
Citation Title: Wonderland, An Administrative History of
Mount Rainier National Park
Year of Publication: 1996
Publisher: Seattle: National Park Service
Source Name: CRBIB
Citation Number: 017248
Citation Type: Narrative
Citation Location: PWRO-SEA, MORA, HFC

Citation Author: Comp, T. Allan
Citation Title: Historic Building Inventory, Mount Rainer
National Park
Year of Publication: 1983
Source Name: CRBIB
Citation Number: 004284
Citation Type: Narrative
Citation Location: PWR-SEA, WASO

Citation Author: Franklin, Jerry F., et al.
Citation Title: The Forest Communities of Mount Rainier
National Park, Scientific Monograph Series
No. 19
Year of Publication: 1988
Publisher: Washington D.C.: National Park Service
Source Name: PWRO-SEA
Citation Type: Both Graphic And Narrative
Citation Location: PWRO-SEA, MORA

Citation Author: Franklin, Jerry F. and C.T. Dyrness
Citation Title: Natural Vegetation of Oregon and
Washington, General Technical Report PNW-
8
Year of Publication: 1973

- Publisher:** Portland: U.S. Department of Agriculture
Source Name: PWRO-SEA
Citation Type: Both Graphic And Narrative
Citation Location: PWRO-SEA
- Citation Title:** General Information Publication
Year of Publication: No date. Information retrieved on 9/10/03.
Citation Type: Narrative
Citation Location: <www.nps.gov/mora/RDPPayne2/gi19191.htm>
- Citation Author:** Good, Albert H., ed.
Citation Title: Park and Recreation Structures, 3 vols.
Year of Publication: 1938
Publisher: Washington D.C.: National Park Service
Source Name: PWRO-SEA
Citation Type: Both Graphic And Narrative
Citation Location: PWRO-SEA, WASO, HFC
- Citation Author:** McClelland, Linda Flint
Citation Title: Presenting Nature: The Historic Landscape Architecture of the National Park Service, 1916 to 1942
Year of Publication: 1993
Publisher: Washington D.C.
Source Name: PWRO-SEA
Citation Type: Both Graphic And Narrative
Citation Location: PWRO-SEA
- Citation Author:** McIntyre, Robert N.
Citation Title: Short History of Mount Rainier National Park
Year of Publication: 1952
Source Name: CRBIB
Citation Number: 011441
Citation Type: Narrative
Citation Location: MORA, PWRO-SEA
- Citation Author:** Mills, Libby
Citation Title: History of east side development: Ohanapecosh area
Year of Publication: 1976

Citation Type: Narrative
Citation Location: MORA

Citation Author: Moir, William H.
Citation Title: Forests of Mount Rainier National Park: A Natural History
Year of Publication: 1989
Publisher: Seattle: Pacific Northwest National Parks and Forests Association
Source Name: PWRO-SEA
Citation Type: Both Graphic And Narrative
Citation Location: PWRO-SEA

Citation Author: National Park Service
Citation Title: Mount Rainier National Park Roads and Bridges. Washington, D.C.: Historic American Engineering Record
Year of Publication: 1994
Publisher: Washington D.C.: Historic American Engineering Record
Source Name: HAER
Citation Number: HAER WA-35
Citation Type: Narrative
Citation Location: PWR)-SEA, WASO, LOC

Citation Author: National Park Service
Citation Title: Mather Memorial Parkway, Between Northeast Entrance and Chinook Pass, Longmire vicinity, Pierce County, WA
Year of Publication: 1992
Publisher: Washington D.C.: Historic American Engineering Record
Source Name: HAER
Citation Number: HAER WA-125
Citation Type: Narrative
Citation Location: PWR)-SEA, WASO, LOC

Citation Author: National Park Service
Citation Title: White River Bridge at Yakima Park Highway, Longmire vicinity, Pierce County, WA
Year of Publication: 1992

Publisher: Washington D.C.: Historic American
Engineering Record

Source Name: HAER

Citation Number: HAER WA-25

Citation Type: Narrative

Citation Location: PWR)-SEA, WASO, LOC

Citation Author: National Park Service

Citation Title: East Side Highway, Between Ohanapecosh
Entrance and Cayuse Pass, Longmire vicinity,
Pierce County, WA

Year of Publication: 1992

Publisher: Washington D.C.: Historic American
Engineering Record

Source Name: HAER

Citation Number: HAER WA-25

Citation Type: Narrative

Citation Location: PWR)-SEA, WASO, LOC

Citation Author: National Park Service

Citation Title: Resource Management Plan, Mount Rainier
National Park

Year of Publication: 1990

Source Name: CRBIB

Citation Number: 015743

Citation Type: Narrative

Citation Location: HFC

Citation Author: National Park Service

Citation Title: Superintendent's Annual Reports, 1906-1966

Source Name: Mount Rainier National Park Archives and
Collections

Citation Type: Narrative

Citation Location: MORA

Year of Publication: 2003

Citation Type: Personal Interview, Burtchard, Greg (MORA
Archaeologist)

Year of Publication: 2004

Citation Type: Personal Interview, Diaz, Benjamin (MORA
Archaeologist)

Citation Author: Ripp
Citation Title: "Mount Rainier Mining Company"
Year of Publication: 1999
Citation Type: Narrative
Citation Location: MORA

Citation Author: Schiltgen, Lora
Citation Title: Managing a Rustic Legacy: A Historic Landscape Study and Management Plan for Longmire Springs Historic District, Mount Rainier National Park, Master's Thesis
Year of Publication: 1986
Publisher: University of Oregon, Masters
Source Name: CRBIB
Citation Number: 014609
Citation Type: Narrative
Citation Location: WASO

Citation Author: Thompson, Erwin N.
Citation Title: Mount Rainier National Park, Washington, Historic Resource Study
Year of Publication: 1981
Source Name: CRBIB
Citation Number: 011441
Citation Type: Narrative
Citation Location: MORA, PWRO-SEA
Citation Location: WASO

Citation Author: Unrau, Harlan D.
Citation Title: Historical Overview and Preliminary Assessment of Rock Work, Bridges, and Roadway-Related Appurtenances Along State Highways 410 and 123 in Mount Rainier National Park
Year of Publication: 1988
Publisher: Denver: Denver Service Center, National Park Service, 1988.

Source Name: CRBIB
Citation Number: 014609
Citation Type: Narrative
Citation Location: WASO

Citation Author: Various
Citation Title: Photographic Collections, 1920s-1970s
Source Name: Mount Rainier National Park Archives and Collections
Citation Type: Graphic
Citation Location: Mount Rainier National Park Archives, Tahoma Woods

Citation Author: Various
Citation Title: Map and Drawing Files
Source Name: Mount Rainier National Park Archives and Collections
Citation Type: Graphic
Citation Location: Mount Rainier National Park Archives, Tahoma Woods

Citation Author: Various
Citation Title: Archival Collections
Source Name: Mount Rainier National Park Archives and Collections
Citation Type: Graphic
Citation Location: Mount Rainier National Park Archives, Tahoma Woods

Supplemental Information

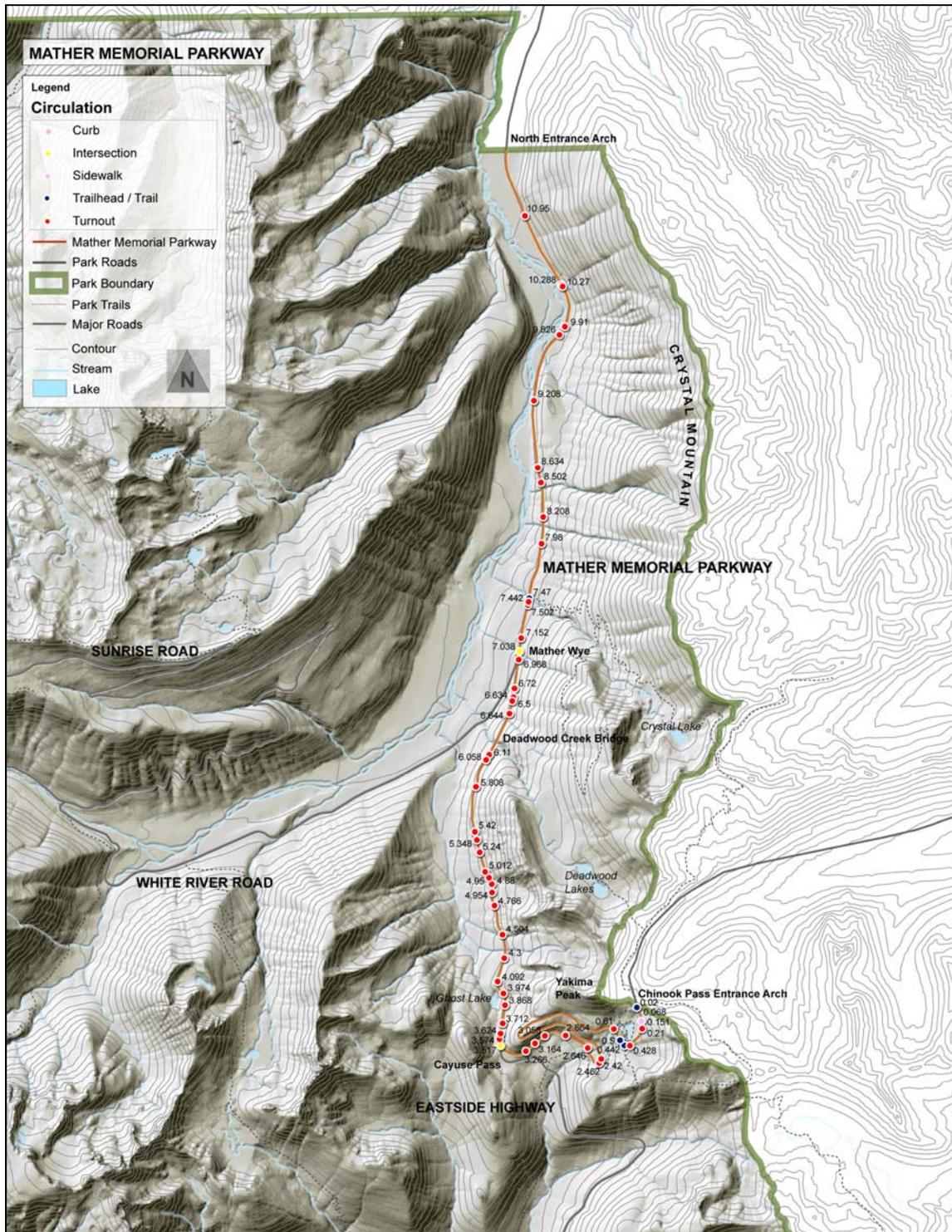
Title: Circulation Features Chart
Description: Data collected during CLI fieldwork in July 2004. In the features lists, each feature is given a unique identity number noted in miles. Each feature has a unique identity number noted in miles, beginning with milepoint (MP) 0.000 at the park's southeast entrance, the Chinook Pass Entrance Arch. The end point is marked where the road exits the park at the north entrance arch (MP 11.600).

Feature ID	Feature Name	Contributing	Compatible	Condition
MP00.002	2-Trailhead	Yes		Good
MP00.068	2-Curb	No	No	Good
MP00.151	2-Sidewalk	No	No	Good
MP00.210	2-Turnout	No	No	Good
MP00.428	2-Turnout	No	No	Good
MP00.442	2-Trailhead	Yes		Good
MP00.500	2-Trailhead	Yes		Good
MP00.610	2-Turnout	Yes		Good
MP02.420	2-Turnout	No	No	Good
MP02.462	2-Turnout	Yes		Good
MP02.646	2-Turnout	Yes		Good
MP02.864	2-Turnout	Yes		Good
MP03.058	2-Turnout	Yes		Good
MP03.164	2-Turnout	Yes		Good
MP03.266	2-Turnout	Yes		Good
MP03.517	2-Intersection	Yes		Good
MP03.542	2-Turnout	Yes		Good
MP03.624	2-Turnout	Yes		Good
MP03.712	2-Turnout	Yes		Fair
MP03.868	2-Turnout	Yes		Good
MP03.974	2-Turnout	Yes		Good
MP04.092	2-Turnout	No	No	Good
MP04.300	2-Turnout	No	No	Good
MP04.504	2-Turnout	Yes		Poor
MP04.746	2-Turnout	Yes		Fair
MP04.880	2-Turnout	Yes		Good
MP04.950	2-Turnout	Yes		Fair
MP04.954	2-Turnout	Yes		Good
MP05.012	2-Turnout	Yes		Good
MP05.240	2-Turnout	Yes		Fair
MP05.348	2-Turnout	Yes		Good
MP05.420	2-Turnout	Yes		Good
MP05.808	2-Turnout	Yes		Fair
MP06.058	2-Turnout	Yes		Good
MP06.110	2-Turnout	Yes		Good
MP06.500	2-Turnout	Yes		Good
MP06.634	2-Turnout	No	No	Good
MP06.644	2-Turnout	No	No	Good
MP06.720	2-Turnout	Yes		Good
MP06.968	2-Turnout	Yes		Good
MP07.038	2-Intersection	Yes		Good
MP07.152	2-Turnout	Yes		Fair
MP07.442	2-Turnout	Yes		Fair
MP07.470	2-Turnout	Yes		Good
MP07.502	2-Trailhead	Yes		Good
MP07.980	2-Turnout	No	No	Good

Mather Memorial Parkway
Mount Rainier National Park

Feature ID	Feature Name	Contributing	Compatible	Condition
MP08.208	2-Turnout	No	No	Good
MP08.502	2-Turnout	Yes		Good
MP08.634	2-Turnout	No	No	Good
MP09.208	2-Turnout	Yes		Good
MP09.826	2-Turnout	No	No	Good
MP09.910	2-Turnout	No	No	Good
MP10.270	2-Turnout	Yes		Good
MP10.288	2-Turnout	Yes		Good
MP10.950	2-Turnout	Yes		Good

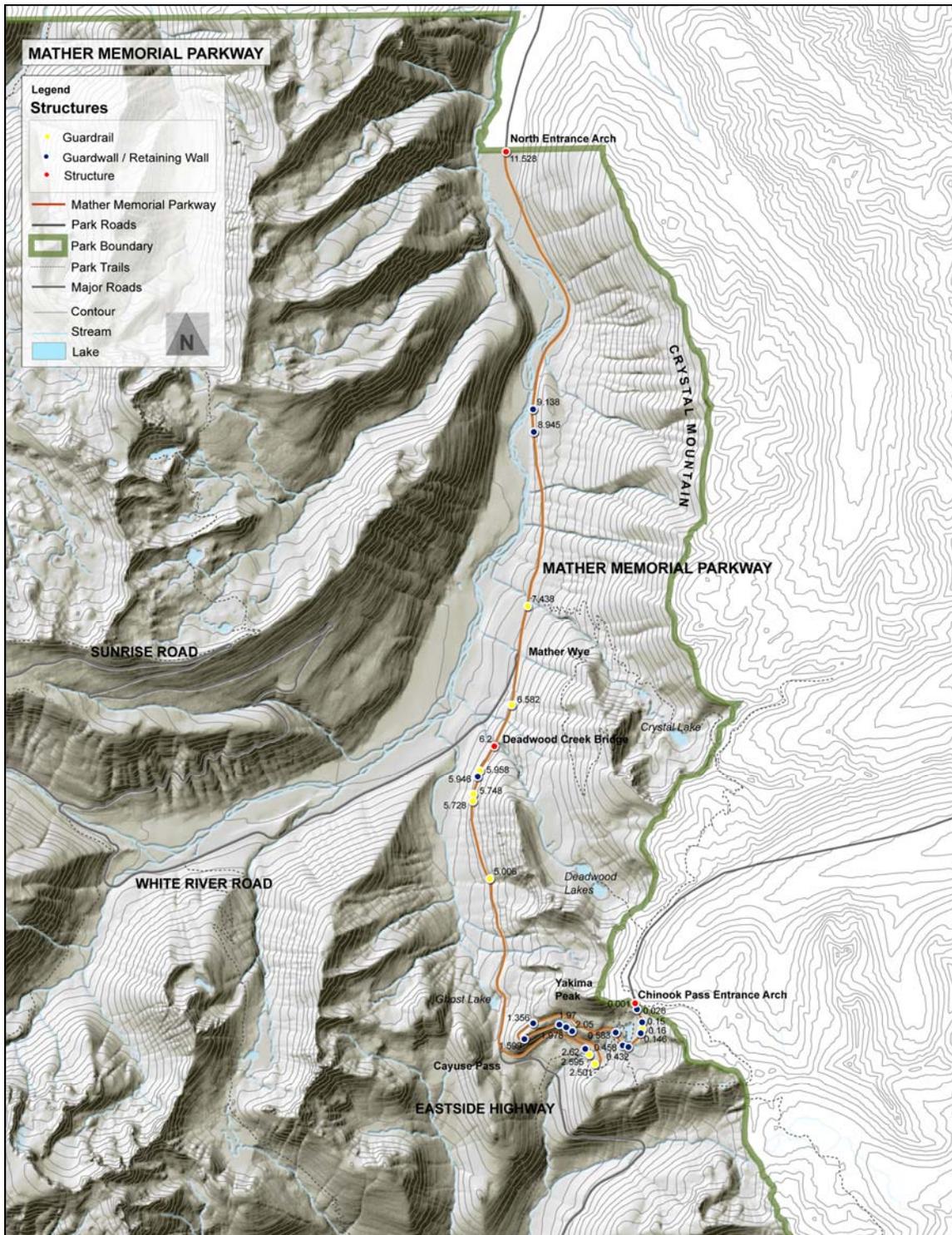
Title: Circulation Features Map
Description: Data collected during CLI fieldwork in July 2004.



Title: Buildings and Structures Chart
Description: Data collected during CLI fieldwork in July 2004. Each feature has a unique identity number noted in miles, beginning with milepoint (MP) 0.000 at the park's southeast entrance, the Chinook Pass Entrance Arch. The end point is marked where the road exits the park at the north entrance arch (MP 11.600).

Feature ID	Feature Name	Type	Contributing	Compatible	Condition
MP00.001	3-Structure	Chinook Pass Entrance Arch	Yes		Fair
MP00.026	3-Retaining Wall	Drylaid/Coursed/Semi-hewn Stone	Yes		Good
MP00.146	3-Retaining Wall	Drylaid/Coursed/Semi-hewn Stone	Yes		Good
MP00.150	3-Guardrail	Stone Pilaster and Wood Rail Fence	No	No	Poor
MP00.160	3-Retaining Wall	Drylaid/Coursed/Semi-hewn Stone	Yes		Good
MP00.432	3-Retaining Wall	Drylaid retaining wall	No	Yes	Good
MP00.458	3-Guardwall	Modified Type 4 Guardwall	No	Yes	Good
MP00.583	3-Guard and Retaining Wall	Modified Type 4 Guardwall with Historic Retaining Wall	No	Yes	Good
MP01.356	3-Guardwall	Modified Type 4 Guardwall	No	Yes	Good
MP01.599	3-Guard and Retaining Wall	Modified Type 4 Guardwall with Historic Retaining Wall	No	Yes	Good
MP01.970	3-Guard and Retaining Wall	Modified Type 4 Guardwall with Retaining Wall	No	Yes	Good
MP01.978	3-Retaining Wall	Drylaid/Random/Semi-hewn Stone	Yes		Good
MP02.050	3-Guard and Retaining Wall	Modified Type 4 Guardwall with Historic Retaining Wall	No	Yes	Good
MP02.501	3-Guardrail	COR-TEN® Steel W Guardrail	No	No	Poor
MP02.595	3-Guardrail	COR-TEN® Steel W Guardrail	No	No	Poor
MP02.620	3-Retaining Wall	Mortared/Coursed/Hewn Stone	Yes		Good
MP05.006	3-Guardrail	Log Guardrail	No	No	Poor
MP05.728	3-Guardrail	COR-TEN® Steel W Guardrail	No	No	Good
MP05.748	3-Guardrail	Log Guardrail	No	No	Poor
MP05.946	3-Guardwall	Jersey Barrier	No	No	Good
MP05.958	3-Guardrail	Log Guardrail	No	No	Poor
MP06.200	3-Structure	Bridge	No	No	Good
MP06.582	3-Guardrail	Stone Pilaster and Wood Rail Fence	No	No	Poor
MP07.438	3-Rock Barrier	Linear/Turnout	No	No	Good
MP08.945	3-Guard and Retaining Wall	Type 1 Guardwall	Yes		Good
MP09.138	3-Guard and Retaining Wall	Type 1 Guardwall	Yes		Fair
MP11.528	3-Structure	Entrance Arch	No	Yes	Fair

Title: Buildings and Structures Map
Description: Data collected during CLI fieldwork in July 2004.

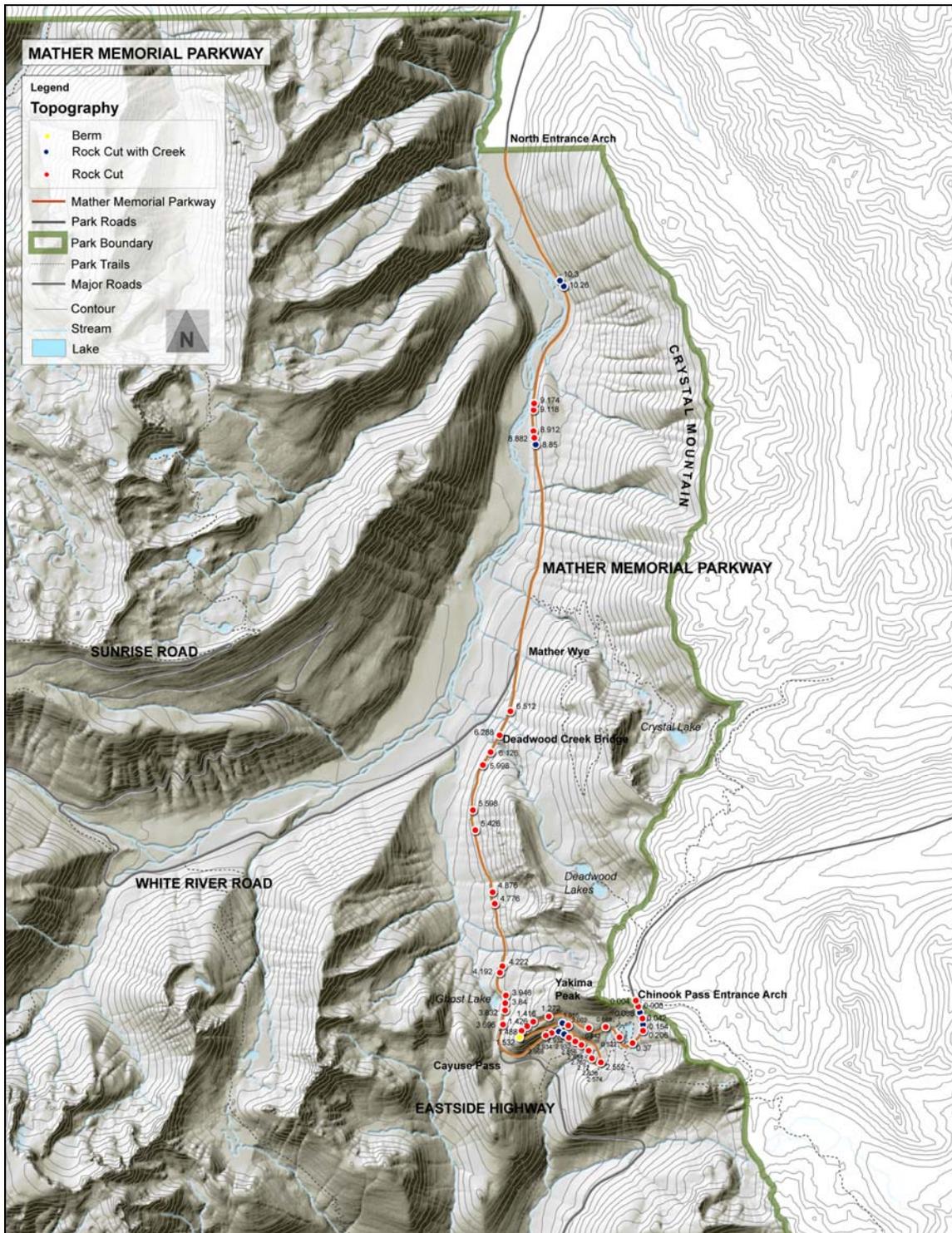


Title: Topography Features Chart
Description: Data collected during CLI fieldwork in July 2004. Each feature has a unique identity number noted in miles, beginning with milepoint (MP) 0.000 at the park's southeast entrance, the Chinook Pass Entrance Arch. The end point is marked where the road exits the park at the north entrance arch (MP 11.600).

Feature ID	Feature Name	Type	Contributing	Compatible	Condition
MP00.004	5-Rock Cut	Battered	Yes		Good
MP00.006	5-Rock Cut	Battered	Yes		Good
MP00.042	5-Engineered Creek	Engineered Creek/Small	Yes		Good
MP00.088	5-Rock Cut	Battered	Yes		Good
MP00.154	5-Engineered Creek	Engineered Creek/Small	Yes		Good
MP00.206	5-Rock Cut	Battered	No	No	Good
MP00.370	5-Rock Cut	Vertical	No	No	Good
MP00.522	5-Rock Cut	Vertical	Yes		Good
MP00.688	5-Rock Cut	Vertical	Yes		Good
MP00.842	5-Rock Cut	Vertical	Yes		Good
MP01.222	5-Rock Cut	Vertical	Yes		Good
MP01.416	5-Rock Cut	Battered	Yes		Good
MP01.426	5-Rock Cut	Battered	Yes		Good
MP01.488	5-Rock Cut	Battered	Yes		Good
MP01.532	Berm	Berm	No	No	Good
MP01.986	5-Engineered Creek	Engineered Creek/Small	Yes		Good
MP02.002	5-Rock Cut	Battered	Yes		Good
MP02.552	5-Rock Cut	Vertical	Yes		Good
MP02.574	5-Rock Cut	Vertical	Yes		Good
MP02.638	5-Rock Cut	Vertical	Yes		Good
MP02.720	5-Rock Cut	Battered	Yes		Good
MP02.762	5-Rock Cut	Vertical	Yes		Good
MP02.854	5-Rock Cut	Vertical	Yes		Good
MP02.856	5-Engineered Creek	Engineered Creek/Medium	Yes		Fair
MP02.932	5-Rock Cut	Vertical	Yes		Good
MP02.934	5-Engineered Creek	Engineered Creek/Medium	Yes		Good
MP02.968	5-Rock Cut	Battered	Yes		Good
MP03.696	5-Rock Cut	Vertical	Yes		Good
MP03.832	5-Rock Cut	Vertical	Yes		Good
MP03.84	5-Rock Cut	Battered	Yes		Good
MP03.946	5-Rock Cut	Battered	Yes		Good
MP04.192	5-Rock Cut	Battered	Yes		Good
MP04.222	5-Rock Cut	Battered	Yes		Good
MP04.776	5-Rock Cut	Battered	Yes		Good
MP04.876	5-Rock Cut	Battered	Yes		Good
MP05.426	5-Rock Cut	Battered	Yes		Good
MP05.598	5-Rock Cut	Battered	Yes		Good
MP05.998	5-Rock Cut	Battered	Yes		Good
MP06.126	5-Rock Cut	Battered	Yes		Good
MP06.288	5-Rock Cut	Battered	Yes		Good
MP06.512	5-Rock Cut	Vertical	Yes		Good
MP08.850	5-Engineered Creek	Engineered Creek/Small	Yes		Good
MP08.882	5-Rock Cut	Battered	Yes		Good
MP08.912	5-Rock Cut	Vertical	Yes		Good

Feature ID	Feature Name	Type	Contributing	Compatible	Condition
MP09.118	5-Rock Cut	Vertical	Yes		Good
MP09.174	5-Rock Cut	Battered	Yes		Good
MP10.260	5-Engineered Creek	Engineered Creek/Small	Yes		Good
MP10.300	5-Engineered Creek	Engineered Creek/Small	Yes		Good

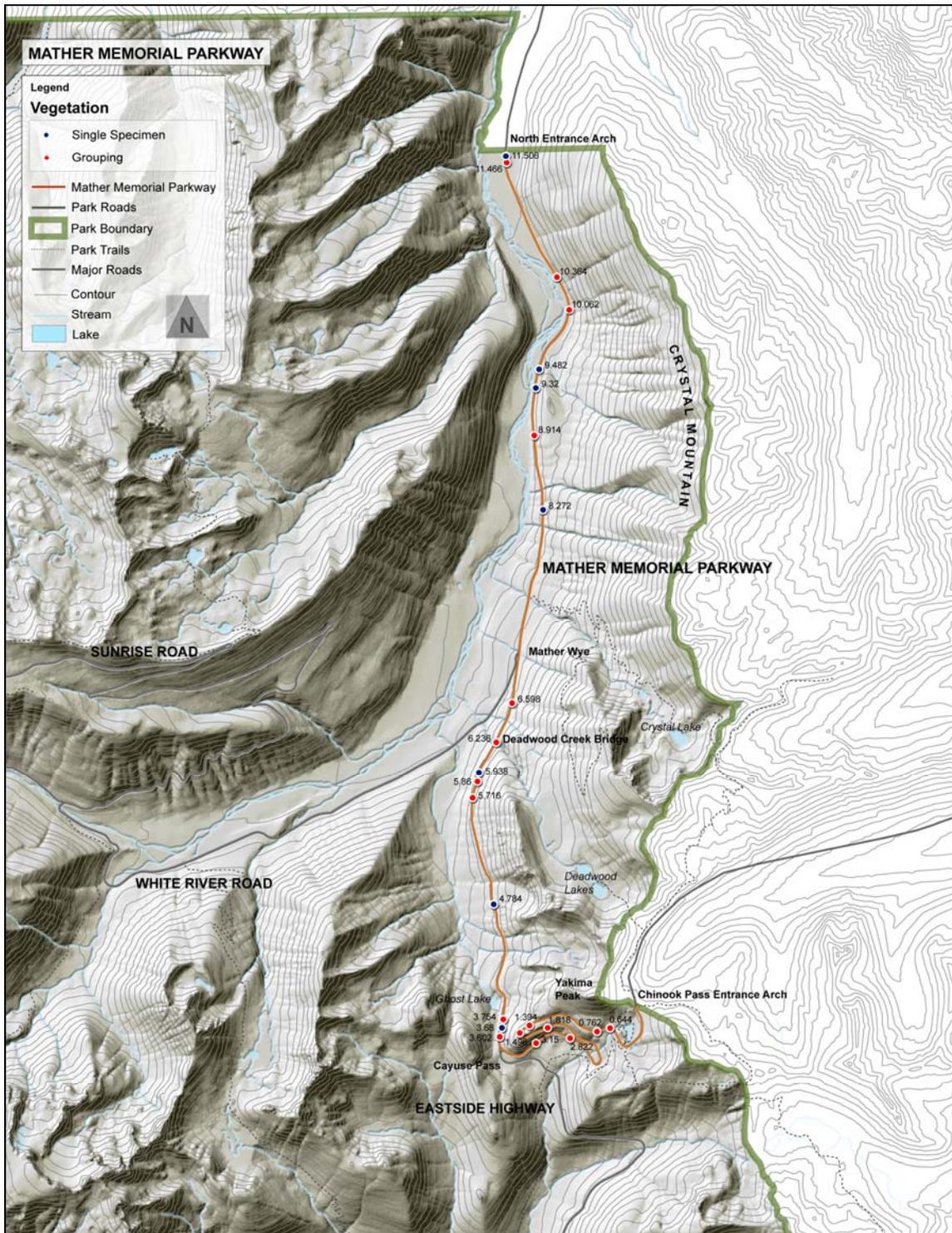
Title: Topography Features Map
Description: Data collected during CLI fieldwork in July 2004.



Title: Vegetation Chart
Description: Data collected during CLI fieldwork in July 2004. Each feature has a unique identity number noted in miles, beginning with milepoint (MP) 0.000 at the park's southeast entrance, the Chinook Pass Entrance Arch. The end point is marked where the road exits the park at the north entrance arch (MP 11.600).

Feature ID	Feature Name	Type	Contributing
MP00.644	6-Tree-Grouping	Fill Slope	Yes
MP00.762	6-Tree-Grouping	Fill Slope	Yes
MP01.394	6-Tree-Grouping	Fill Slope	Yes
MP01.498	6-Tree-Grouping	Fill Slope	Yes
MP01.818	6-Tree-Grouping	Fill Slope	Yes
MP02.822	6-Tree-Grouping	Fill Slope	Yes
MP03.150	6-Tree-Grouping	Fill Slope	Yes
MP03.602	6-Tree-Grouping	Fill Slope	Yes
MP03.680	6-Tree-Specimen	Fill Slope	Yes
MP03.754	6-Tree-Grouping	Turnout	Yes
MP04.784	6-Tree-Specimen	Fill Slope	Yes
MP05.716	6-Tree-Grouping	Fill Slope	Yes
MP05.860	6-Tree-Grouping	Fill Slope	Yes
MP05.938	6-Tree-Specimen	Fill Slope	Yes
MP06.236	6-Tree-Grouping	Fill Slope	Yes
MP06.598	6-Tree-Grouping	Fill Slope	Yes
MP08.272	6-Tree-Specimen	Shoulder	Yes
MP08.914	6-Tree-Grouping	Fill Slope	Yes
MP09.320	6-Tree-Specimen	Turnout	Yes
MP09.482	6-Tree-Specimen	Shoulder	Yes
MP10.062	6-Tree-Grouping	Turnout	Yes
MP10.364	6-Tree-Grouping	Turnout	Yes
MP11.466	6-Tree-Grouping	Shoulder	Yes
MP11.506	6-Tree-Specimen	Shoulder	Yes

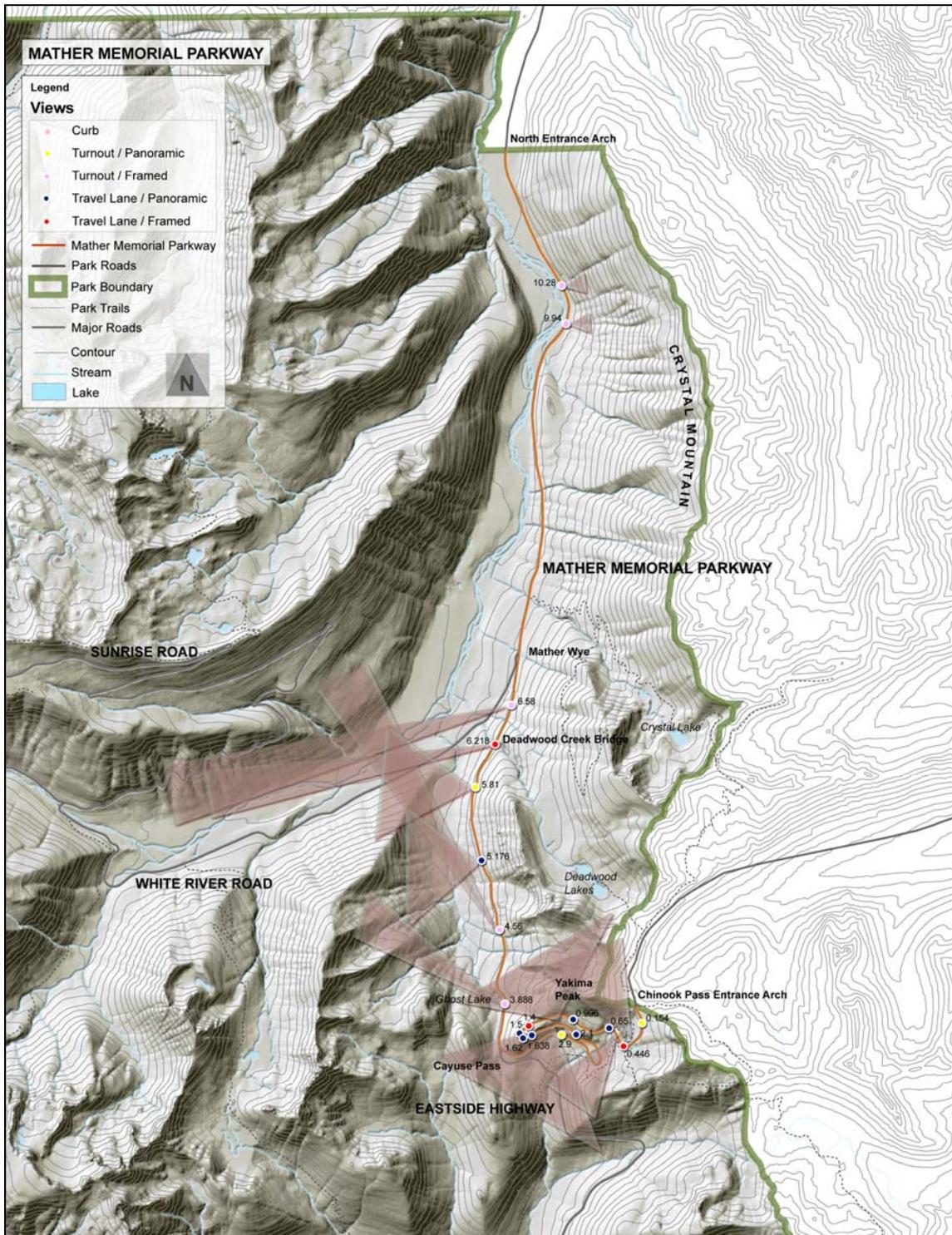
Title: Vegetation Map
Description: Data collected during CLI fieldwork in July 2004.



Title: Views and Vistas Chart
Description: Data collected during CLI fieldwork in July 2004. Each feature has a unique identity number noted in miles, beginning with milepoint (MP) 0.000 at the park's southeast entrance, the Chinook Pass Entrance Arch. The end point is marked where the road exits the park at the north entrance arch (MP 11.600).

Feature ID	Feature Name	Type	Contributing	Condition
MP00.154	7-Viewpoint	Panoramic/Turnout	Yes	Good
MP00.446	7-Viewpoint	Framed/Travel Lane	Yes	Good
MP00.650	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP00.996	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP01.400	7-Viewpoint	Framed/Travel Lane	Yes	Good
MP01.500	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP01.620	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP01.670	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP02.100	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP02.900	7-Viewpoint	Panoramic/Turnout	Yes	Good
MP03.888	7-Viewpoint	Framed/Turnout	Yes	Fair
MP04.560	7-Viewpoint	Framed/Turnout	Yes	Fair
MP05.176	7-Viewpoint	Panoramic/Travel Lane	Yes	Good
MP05.810	7-Viewpoint	Panoramic/Turnout	Yes	Good
MP06.218	7-Viewpoint	Framed/Travel Lane	Yes	Poor
MP06.580	7-Viewpoint	Framed/Turnout	Yes	Fair
MP09.940	7-Viewpoint	Framed/Turnout	Yes	Good
MP10.280	7-Viewpoint	Framed/Turnout	Yes	Good

Title: Views and Vistas Map
Description: Data collected during CLI fieldwork in July 2004.



Title: Small Scale Features Chart

Description: Data collected during CLI fieldwork in July 2004. Each feature has a unique identity number noted in miles, beginning with milepoint (MP) 0.000 at the park's southeast entrance, the Chinook Pass Entrance Arch. The end point is marked where the road exits the park at the north entrance arch (MP 11.600).

Feature ID	Feature Name	Type	Contributing	Compatible
MP00.060	8-Sign	Speed Limit 35	No	No
MP00.090	8-Culvert	Drop Inlet	No	No
MP00.150	8-Culvert	Drop Inlet	No	No
MP00.151	8-Culvert	Drop Inlet	No	No
MP00.260	8-Culvert	Drop Inlet	No	No
MP00.341	8-Culvert	Drop Inlet	No	No
MP00.352	8-Culvert	36" Concrete culvert with mortared stone headwall	Yes	
MP00.423	8-Culvert	Drop Inlet	No	No
MP00.554	8-Culvert	Drop Inlet	No	No
MP00.914	8-Culvert	Drop Inlet	No	No
MP01.013	8-Culvert	Drop Inlet	No	No
MP01.430	8-Sign	Speed Warning 20	No	No
MP01.908	8-Culvert	24" Corrugated steel culvert	No	No
MP01.983	8-Culvert	Drop Inlet	No	No
MP02.236	8-Culvert	Drop Inlet	No	No
MP02.282	8-Culvert	48" Concrete culvert with mortared stone headwall	Yes	
MP02.316	8-Culvert	Box Culvert	Yes	
MP02.364	8-Sign	Speed Warning 20	No	No
MP02.376	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP02.432	8-Culvert	24" Corrugated steel culvert	No	No
MP02.482	8-Culvert	24" Corrugated steel culvert	No	No
MP02.500	8-Culvert	24" Double concrete culvert with mortared stone headwall	Yes	
MP02.532	8-Culvert	24" Corrugated steel culvert	No	No
MP02.596	8-Culvert	Not surveyed	Unknown	
MP02.624	8-Culvert	24" Double concrete culvert with mortared stone headwall	Yes	
MP03.134	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP03.216	8-Culvert	24" Corrugated steel culvert	No	No
MP03.386	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP03.676	8-Sign	Speed Limit 35	No	No
MP03.700	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP03.800	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	

Feature ID	Feature Name	Type	Contributing	Compatible
MP03.870	8-Sign	Speed Warning 25	No	No
MP04.038	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP04.110	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP04.258	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP04.250	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP04.298	8-Sign	Speed Limit 50	No	No
MP04.322	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP04.476	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP04.498	8-Culvert	36" Concrete culvert with mortared stone headwall	Yes	
MP04.500	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP04.610	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP04.722	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP04.780	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP04.988	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP05.066	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP05.202	8-Culvert	24" Corrugated steel culvert	No	No
MP05.330	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP05.480	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP05.734	8-Culvert	Drop Inlet	No	No
MP05.810	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP05.868	8-Culvert	24" Corrugated steel culvert	No	No
MP06.020	8-Culvert	24" Corrugated steel culvert	No	No
MP06.166	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP06.286	8-Culvert	Drop Inlet	No	No
MP06.392	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP06.444	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP06.482	8-Culvert	24" Concrete culvert with mortared	Yes	

Feature ID	Feature Name	Type	Contributing	Compatible
		stone headwall		
MP06.534	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP06.714	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP06.784	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP06.846	8-Sign	Speed Warning 35	No	No
MP06.932	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP07.019	8-Monument	Directional Marker Monument	Yes	
MP07.110	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP07.242	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP07.436	8-Culvert	18" Corrugated steel culvert rubble headwall	Yes	
MP07.504	8-Culvert	Box Culvert	No	No
MP07.682	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP07.804	8-Culvert	36" Concrete culvert with mortared stone headwall	Yes	
MP07.826	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP07.924	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP08.016	8-Culvert	36" Concrete culvert with drylaid rubble headwall	Yes	
MP08.036	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP08.144	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP08.326	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP08.562	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP08.624	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP08.696	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP09.054	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP09.446	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP09.908	8-Culvert	24" Concrete culvert with mortared	Yes	

Feature ID	Feature Name	Type	Contributing	Compatible
		stone headwall		
MP10.036	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	
MP10.080	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.188	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.246	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.264	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.306	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.374	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.406	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP10.442	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP10.464	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.498	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP10.554	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.582	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.662	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.670	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.684	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.734	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP10.792	8-Culvert	24" Concrete culvert with drylaid rubble headwall	Yes	
MP10.888	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP10.926	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP11.000	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP11.016	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP11.122	8-Culvert	24" Concrete culvert with drylaid	Yes	

Feature ID	Feature Name	Type	Contributing	Compatible
		rubble headwall		
MP11.180	8-Gravel Berm	Berm	No	No
MP11.210	8-Culvert	18" Concrete culvert with mortared stone headwall	Yes	
MP11.256	8-Culvert	24" Concrete culvert with mortared stone headwall	Yes	

Title: Small Scale Features Map
Description: Data collected during CLI fieldwork in July 2004.

